

# THE MONIST

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## MORS MORTIS.\*

*ἐσχατος ἐχθρὸς καταργεῖται ὁ θάνατος.*

—1 Cor. xv. 26

WE read in Ivanhoe, if any one now ever reads Ivanhoe, that in the single combat between De Bois Guilbert and the Disinherited Knight, the latter, as their steeds rushed together, first leveled his lance at the corslet of the champion, but almost at the very moment of collision he changed his aim to the visor, a mark much more difficult to attain but where the shock would be irresistible. Slightly similar has been the procedure of your speaker. It was his purpose long cherished to address you under some sufficiently cryptic title on the general mission of philosophy as the guide of life and the guardian of the higher ideas and ideals that dignify humanity and vindicate the claim of man to be the head of creation. However, regarding the subject more and more nearly, he grew appalled at its magnitude and convinced of the impossibility of any adequate discussion within the limits of your patience. Then it was that the choice of the narrower mark was finally made, a mark most difficult to attain, but yet most certainly well worth attaining. Even now he fears that the barrel is too big for the hoop, that it will be impossible to compress any half-way sufficient presentation within the time allowed. Hence it may be that the necessary directness of statement

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will often take on the appearance of dogmatism. Time fails for establishing in detail every position assumed, some things will have to be taken for granted, but only such as it seems certain can be proved beyond reasonable doubt. Now as the hour contracts, and the way, though broad and smooth, is also exceeding long and exceeding steep, let us without further preliminaries go straight for the heart of the matter.

The basis of all that follows is a strictly spiritual, psychical, or idealistic conception of the universe. When you look round you upon the stars, the sky, the sun, the moon, the earth, the sea, the land, the walls of the house, the bodies of animals and plants, the bodies of your fellows, yea, your own body, the impulse is almost irresistible to declare that these things are the world, or at least its main elements, that they are precisely what they are quite independently of you and your thought or your existence, that you do not make them at all or in any sense, but that your own every-day experience is shaped and determined by them in all its details. You rise in the morning because the sun has arisen and poured its light upon you and dispelled the dark and revealed the smiling countenance of creation.

"Awake! for morning in the bowl of night  
Has flung the stone that puts the stars to flight,  
And lo! the Hunter of the East has caught  
The Sultan's turret in a noose of light."

But the stars and the great stone of the sun and the bowl of heaven and the light itself all seem to be just what they are, no matter what you are, objects independent of you, existing before you and after you, and moulding your own activity at every step, and all in apparent indifference to you as to a puny pygmy. You seem to be but the veriest mote in the sunbeam, dancing there for a moment and then shaken out and falling asunder forever, re-swallowed by

the infinite ocean swifter and surer than even Goethe dreamed of when he wrote:

"We by a billow  
Are lifted, a billow  
Engulfs us, we sink  
And are heard of no more."

Such, apparently, is the tremendous pronouncement of common sense, and it receives daily more and more solemnly the sanction of science, particularly of the grand science of life, with all of her handmaids, zoology, and botany, and physiology, and chemistry, and mechanics, the chiefest of them all.

Against this awful oracle of science and of common sense it is in vain that authority and tradition in any and all of their forms raise an empty protest and appeal to creeds outworn and to dogmas whose origin is only too well understood. What Coleridge declared a century ago of the fair humanities of old religion may now be declared with added emphasis concerning the *whole* body of extra-rational doctrines that for millenniums have swayed the minds and inspired the hearts of the European. All these have vanished, they live no longer in the faith of reason. The common-sense and quasi-scientific view of man and the universe moves on daily with firmer and surer and haughtier tread, reminding us of Homer's description of Discord:

"Small indeed when at first her front she uplifteth, but later  
Holding her head up in heaven, the while on earth she is treading."

There is only one name given under heaven whose magic may arrest the march of this conception, which now rushes over the earth like the shadow of a dim eclipse shedding disastrous twilight over the soul. And that name is philosophy,—not any visionary and unreal speculation, but philosophy more scientific than science herself, philosophy that is the equator and Venus-girdle of the whole

sphere of the sciences, philosophy that neglects no element of experience but submits all the data of all the sciences to the severest analysis of which the human mind is capable. It is only scientific philosophy, philosophy that is the science of science, or science in the second degree, that can transfigure and glorify science herself and weave the harsh words of her oracles into rhythmic verse and set them to heavenly music.

Ah! you smile incredulous, you say these are lofty pretensions, but what semblance of justification can be offered? Well, let us see. The domain of science is the objective world about us, sun, moon, and stars, earth, sea, and air, plants, animals, and minerals, blood and bone and nerve and cells, ether and atoms and sub-atoms and electrons and ions and protons, in a word, the whole universe of mass and motion. All of these science struggles with ever finer and finer subdivision to arrange and order and describe harmoniously and consistently in regular forms called laws. A prodigious, an infinite task, which can never be perfectly performed, but which may be advanced on its way further and further without end; a great and a glorious task, which it is the honor and the dignity, the necessity and the blessedness of the human soul to set itself and to work at forever.

But what are all these objects, this whole sensible world around us? Are they the ultimates of the universe? Are they its finalities? Are they all? Is everything derived from them? and beside them is there no other? To give the answer Yes! as so often is hastily done, even where we might expect something better, is to make the greatest mistake of which human nature is capable. That the universe, the sum total of being, consists of atoms or anything like atoms, or of masses in motion, is the greatest error possible to our understanding, and also the most dangerous; for however noble may be the spirit that strikes into



this path, it must be led thereby ever downward deeper and deeper into the shade, to the City of Dreadful Night. The conception of the universe as a mere dance of atoms is indeed an appalling, a paralyzing conception; nothing to me sounds more piteous than the cry of a mighty soul, of some strong swimmer in his agony, as of Bertrand Russell or Matthew Arnold, while this tremendous quasi-scientific conception enswathes it with impenetrable gloom. Hear the poet in his famous lines on "Dover Beach."

"Ah, love, let us be true  
To one another! For the world which seems  
To lie before us like a land of dreams,  
So various, so beautiful, so new,  
Hath really neither joy, nor love, nor light,  
Nor certitude, nor peace, nor help for pain;  
And we are here as on a darkling plain  
Swept with confused alarms of struggle and flight,  
Where ignorant armies clash by night."

The temptation is strong to dwell upon the deep and widespread and all-pervasive working of this materialistic conception, to show how it moulds, and how it tinges where it does not mould, all our modes of thought and feeling, all the activities of our life, our politics, our society, our amusements, our literature, and even our art. Consider the Omar Khayyam craze that swept over us some years ago, consider the beautiful illustrations by Elihu Vedder, with their ever recurrent swirl expressing the alternate collection and dissipation of the life-elements, now gathered up into a person, now scattered to the winds. But the minutes will not wait, we must hurry on. The popular, the current, the quasi-scientific answer "yes," is then an utterly hopeless answer; but that is not the whole of it; the answer is not only hopeless, it is also false. Precisely here philosophy must and does administer its great corrective, not by way of any abridgement but by way of enlargement and supplementation. What science maintains about the physical world is just and true, and immensely impor-

tant. But such is not the whole story. The physical world of moving masses is not the final, not the ultimate world. On the contrary, it is a construct, a world of images, of symbols that are not at all like the things they symbolize. Such is the central and fundamental proposition of philosophy, the pivot on which all our thinking turns.

As already hinted, no complete proof can be given at present, though certain clear indications should suffice. Hold up a pencil before your face and look with both eyes open straight at the moon,—you will see two pencils; now look straight at the pencil,—you will see two moons. The two pencils and two moons are clearly constructs which you make in the act of seeing; your seeing consists in the making of these constructs. What is said of the pencils holds equally of the world around you: it is made by you in the act of seeing, it is made double, to every point  $P$  there corresponds a point  $P'$ ; only in a certain region, a line or surface called the horopter, do the corresponding points  $P$  and  $P'$  fall together into one. Moreover, this horopter changes immensely from instant to instant, it flutters like a flag in a September gale. Since this world of sight is thus built up and changed from instant to instant and is in general always double, it is idle to talk of this visible world as being an ultimate or final thing; it is demonstrably a vision, a construct of your own spirit activity.

Similarly, if you press gently on your eye-ball you will see the page before you divide and another page swim out just like the first, and you will also see a bright ring appear above the other eye. These visions are also constructs, or spatial interpretations of your unspatial mental states. So, too, if you fall and strike the back of your head while roller-skating on the sidewalk, you will perhaps see stars. If you stand before a mirror, you will construct a world behind the mirror and call it a reflection, but it is a construct none the less. If you look at the smooth pictures in a

stereoscope, you will construct what has no depth into endless depths of space. If disturbed in sleep or treated with hashish or opium, you may have amazing dreams, in which you see or construct titanic scenes and enact a long-drawn-out history. All these are constructs, all of the same general nature, all the creatures of your ever active soul.

But you say, all these are unreal imaginations, whereas the tree, the house, your friend's body, and your own are all real objects permanent and sensible to all. However, we have just seen that the apparently permanent things, like pencil and moon, are not permanent and unchanging, they are swiftly changing every moment. But is there no difference between the real and the unreal? Certainly, an immense difference. The real is what we *all* construct alike, or so nearly alike that it may and does pass as exactly alike; hence we speak of it as the same. A and B looking at the sky construct each his own moon, but since A and B are *nearly identical*, the two constructs or moons are also nearly identical. The Real then is the common and constant element in the constructs of individual spirits; hence it appears permanent, unchanging, the same for all men.<sup>1</sup>

What has been said about seeing may be said about all other forms of sensing, as hearing, tasting, smelling, touching etc.: all are modes of constructing, of forming space-and-time symbols of spiritual activities that are not in space or time.

It is curious to note what seemingly strange forms these constructions take. You have an experience of strain, of muscle contraction, and you construct a certain sight as near; you have an experience of relaxation, and you construct the object as far away. You have a certain feeling of rotation of the eyes, and you construct the object as *tall* or *high*; you have another different *feeling* of rotation

<sup>1</sup> For an interesting though unsatisfactory discussion of this point see F. Enriques, *Problemi della Scienza*, Chap. II, pp. 58-107.

and you construct the object as *long* or horizontally extended. You have a certain *experience* that rises and falls and returns to its first stage, and you construct the sight as of a circle or other closed curve. You have another *experience* of even, gentle relaxation, and you construct a level moon-beam or perhaps a straight railroad track.

Well, then, your visible, tangible, audible, sensible world is a world of constructs, the products of your own spirit-activity, and it is *real* just so far as your spirit-activity agrees with itself and with the communal spirit-activity of your spirit-fellows. But what, you ask, is a spirit, a soul, a mind, anyway? That is a question each of you must answer for yourself, no one can answer it for you. Your inner experience is known to you and to you only. I can only guess whether you are interested or bored. You may be in accord, or you may be spurning my words as nonsense. But you know, each one of you, though your knowledge is strictly incommunicable, whatever signs or gestures you may make; for a word is a sign, it is a gesture of the vocal organs.

What then do you know? I can never tell. But I may be allowed to make a bold and momentous hypothesis. I guess that you are like me. Observing that my own body, as a sense-construct, corresponds to my own spirit-nature, to my own soul-experiences, and observing that your body, as also a sense-construct, resembles my own in general plan and countless details, I apply the familiar Rule of Three and form the proportion: As my body is to my spirit, so is your body to—your spirit.

Such is my reason, not a strictly logical, but an extremely probable analogical, reason for supposing there are other spirits than my own, and that I am not now talking to a congregation of vapors and automata. Correct or incorrect, we proceed on this hypothesis. I suppose then that there are as many inner experiences as there are faces

before me, inner experiences much like my own. If so, then you feel, you think, you will, you hope, you fear, you love, you hate, and do a million other such things that you know about and that no other can or at least does know about. All these incommunicables are elements or contents of your experience.

But who are *you*? Well, these contents of experience, these hopes, fears, pains, pleasures, thoughts, feelings, wills, and the rest, known and knowable to you and you only, are not a mere bundle; they are all tight interwoven at each and every instant, each essential to every other, and all interlocked in a definite way not quite the same for any two of you. No one of you thinks or feels precisely the same as any other at this instant. This is not all, however. No one of you is quite the same at any two instants, that is, the total complex of your experience varies from instant to instant, like an iridescent garment gleaming in the sun. Such a total complex (at any instant) of your thoughts, feelings, desires, and the like we may call a cross-section of your being. These cross-sections vary from instant to instant as your life runs along. But they do not vary wildly and at random from moment to moment, from hour to hour, from day to day, from year to year. On the contrary, they change in a very definite way as you move on in life, a way that is very much alike in us all, but not exactly alike in any two, though extremely alike in unioval twins. So then your total soul-experience, the sum of your psychic experiences (both conscious and subconscious), hangs together in a definite unity at every instant and also in a definite series of such unities from instant to instant. Now this whole definite way in which your experience hangs together not only at every moment but all the time from moment to moment, this entire *connectivity*, is your Self, your Ego, your Personality, which is thus seen to be a *Law of Psychic Form*.

Now that there actually is such a thing as psychic experience, such a thing as thought, feeling, volition, as hope and fear, pleasure and pain, purpose and the like, is the one thing that I know and you know, each for himself as a fact, and we each *assume* it for all of our fellows. Not merely, however, for all our fellow men, but also for all our fellow beasts: we assume that each of these is really a spirit, that it has psychic experience similar to our own, though of far lower order, and all our daily life proceeds on this assumption. We ascribe feelings, such as fear and desire and pain and pleasure and the like, to dogs and cats and horses and birds. These latter, indeed, Aristophanes seems to have regarded with awe and wonder as an airy antemundane thing, as being

"Born the first of things  
Before the sun, before the wind,  
Before the gods, before mankind  
.....  
Wishes there and feelings strong,  
Incommunicable throng."

Note, however, very carefully. We must not think of the body of any animal as the dwelling of its soul, as a place or region where the soul lives and has all these psychic experiences. By no means; the soul does not dwell in any body, it is vain to hunt for it there or anywhere else. It dwells in no place at all, it is placeless. All the bodies that you see are your own constructs, the creatures of your own soul-activity, and not one of these bodies has any soul, not even your own body. But you are a complex of well-ordered soul-experiences which correspond to your body and to which your body corresponds. And since as a matter of fact your soul-experience corresponds to your body, you *assume* that there is a soul-experience corresponding to your neighbor's body; and also to your pet parrot's body, and also to the fierce tiger's body, and to the body of the oyster and the earth-worm, and of all the rest. But these

assumed soul-experiences corresponding to these bodies by no means dwell *in* these bodies. If then we speak of the soul of any body it is only an elliptical expression; we mean the complex of soul-experiences not dwelling in that body but only corresponding to that body. Pardon me for insisting so much on this point, but it is all important and extremely likely to be misunderstood.

Well, then, with this made clear once for all, we can see at once that it is quite impossible to stop anywhere in the descent upon the Jacob's ladder of spirits. It is a question of degree and not of kind. If we assume a soul-life corresponding to the body of A, and we must do the like for B and C and D and so on clear down to Z, through the whole alphabet of bodies; there must be a soul-life corresponding to every animal and as well to every plant. Nay, we cannot stop there, for the biologist can find no clear dividing line between the organic and the inorganic, as Shaefer so recently declared in his famous Dundee address. We must assume a soul-life, though of inexpressibly low degree, as corresponding to the colloids, to the crystals, to the molecules, to the atoms, to the sub-atoms, the electrons, and to whatever other finer pulverizations may be discovered in the constitution of matter. In other words, we must assume soul-life, psychic experience, of order however infinitely low, as *corresponding* to every phase, however elemental, in the vast complex of constructs that each soul builds up around it and calls the physical world.

If such be the case, then each one of us is a soul, a spirit, and the universe is a republic of spirits, a city of souls. And each one of us builds up around him at every instant a vast world of constructs, of *symbols* that represent to him the unbounded spiritual realm of which he is a citizen. It is only through the medium of these constructs, of this amazing system of symbols, this consummate social device, that any one spirit can or does enter into communi-



cation with any other. You can not tell what your friend or your foe is feeling or thinking or willing except through his words and deeds, but these words and deeds are phenomena of mass and motion; they are not spirit, they are only the signs, the symbols of spirit. When your friend smiles, when your foe scowls, you do not see his love or his hate, you see only certain motions of his features, certain changes in the configuration of masses. You interpret these changes to signify love or hate. But the whole body of your friend or foe was your own construct, your own mental creation, which you made involuntarily as the sign or symbol of your own mental state, and your own mental state not in itself but in relation to another assumed mental or spiritual being called your friend or your foe.

Let us then grasp firmly and hold tenaciously this important notion, that each of us is a spirit in the midst of spirits; that we are acting and interacting with each other continually, and that the vast image of this system of mutual interactions is the boundless physical world of sights and sounds and masses and motions with which each one, each spirit, engirdles himself at every moment, spinning the universe of space and time all round him as the silk worm spins its costly cocoon.

This is not yet all, however. Not only is every spirit compassed about by an infinite engirdling cloud of spirits symbolized by earth and heaven and all that in them is, but the *union of these spirits is complete and perfect*. There is not only a Many, there is also a One. The universe is a unit. It is a Whole. All the exactest science proceeds and must proceed on this supposition. The law of Newton declares that every two particles attract each other directly as the product of their masses and inversely as the squared distance between them. Newton indeed was thinking solely of our solar system, but his successors do not hesitate to extend his law to the remotest stars. If in the depths



of space there should be found any exception, that would only be an occasion to seek for some still higher law of mutual interaction; the physicist does not admit the notion of any particle in the universe out of harness with the rest, —if there were any such, it would be of itself another Universe. He thinks of each atom as the center of a web whose fibers shoot thence in every direction to every other atom in the world. Thus, with its radiant lines of force, every atom fills the whole physical world. But none excludes any other, they are all interpenetrative.

The most modern physicist, who thinks of the atom or ion as a phase of strain in the universal ether, illustrates the same necessity of viewing the world as a whole; for his ether is universal, and each phase at every point is determined by the total stress and strain of the one all-comprehending whole. We do indeed roughly and inaccurately imagine the universe as granular, as like an immense swarm of bees broken up into a countless host of subordinate swarms, and these seem to us to be separate and very distinct. Thus you say the desk is here, the door is there, the tree is yonder. But this segregation is artificial, for convenience only. The physicist, the astronomer, the man of science cannot endure it. His thinking restores and forces him to restore the shattered unity of the world. Similarly a sentence is granulated into words, and these into letters; but it is the sentence that is relatively primitive and unital.

Now this physical frame of things is only a construct, a symbol of spirit interacting amid spirit. The merely seeming separation of the elements of this material universe is a defect, or at least a peculiarity, in this symbolism, which we have just seen it is the self-imposed task of scientific thought to overcome. Since thought cannot rest satisfied with a granulated or subdivided world, but insists on thinking the physical world as one, it would

seem that we cannot hesitate, but must regard the spirit world, the original of the physical picture, as also a unit, as an entirety, as a whole. This unital spirit is what a Hegel might call the Absolute, but we do not need the term. There are many other indications that point clearly toward this spiritual oneness of the world, many other paths of thought that lead to the same goal. But time fails us, we can not pursue them now. Mark well, however, that this unity is noway inconsistent with infinite multiplicity. The individual spirit may be one with the universal spirit and yet by no means cease to be individual. This individual spirit is perhaps best conceived not as a part, but as a phase, of the universal spirit, even as the modern physicist may think of his electron or proton as a phase of strain or displacement in his universal ether. In fact, this conception, though certainly difficult and at first puzzling, admits of the most various illustrations. Even if none of these be quite satisfactory by itself, yet the general convergence of their indications may content us. When we find the meridians all coming together towards a pole, we feel sure there is something of the kind there somewhere, though it is unlikely that any of Dr. Cook's tracks are to be found in its vicinity. Since this conception of the unity of all spirits in one spirit is essential for what follows, it may be well to pause and resort to some of these illustrations.

Imagine a sphere of water, like the earth before dry land appeared, with its surface swaying in gentle waves, and consider one of those waves. Look at it closely, and you see it made up of countless crinkles and wavelets. Suppose you would define one of these wavelets precisely, would tell exactly what it is. To do this you would have to consider the adjacent wavelets and tell what they were; for the wavelet is what it is only by virtue of the bordering wavelets being each exactly what they are; any change in

the next lying wavelet would induce a corresponding change in the central wavelet. But the wavelets of this first ring are similarly determined by the second ring, and these by the third, and so on throughout. It is plain that the central wavelet is thus determined by the whole sphere. The being of the tiniest dimple on the face of the ocean thus extends itself throughout the whole. In this sense then we may say that the wavelet is identical with the sphere, but every other wavelet is similarly identical, they differ only in degree, not in kind, and the whole sphere is the perfect unity of all the wavelets.

Consider also the case of a vibrating chord, as of a violin, or of an ether-beam, a ray of light. The physicist will tell you that either of these is or may be vibrating in millions of ways all at the same time. The unital sensation in question and corresponding to this physical construct called vibrating ether-thread is (we may say) that of white light; this white-light sensation (or may be purple-light sensation) is felt as just as simple as the purest blue, or the purest yellow of the line D, yet it is resolvable into indefinitely many frequencies of vibration and may be spread out in a long rainbow spectrum (not to mention higher and lower frequencies). In case of the vibrating chord, one form of vibration (of the chord as a whole) corresponds to the fundamental tone, while the other so-called over-tones or upper harmonics correspond to the vibrations of the chord in parts. These overtones coexist with the fundamental ground tone, the chord vibrates at the same time as a whole and as subdivided in countless ways into parts. These vibrations coexist and in no way interfere with each other. The corresponding over-tones coexist and in no way interfere with each other or with the ground-tone, but all melt into one tone which is rich in its timbre because of the over-tones, whereas without them the ground-tone would be thin and poor. But the tone is felt

as one, though it may be thus mathematically and even experimentally analyzed into many.

But we need not go to light nor to sound for an example of this coexistence of unity with multiplicity. Your daily life is full of it. You get on the Samson for a river trip and steam up against the current. This current is bearing you downstream four miles an hour, but the wheel drives on the vessel upstream much faster. Meantime you are spinning round the earth's axis from west to east say 800 miles per hour; and with the earth you are racing round the sun nearly 19 miles per second; and with the sun and all the planets and a motley crowd of eccentric comets and meteors you are driving through the sky toward the constellation of Hercules. All the while you are moving every way on deck and perhaps throwing a ball with accuracy; for the movement of the throw melts together with all these other motions into perfect unity. They all coexist and mutually determine but nowise interfere.

Nor is there any limit whatever to this composition or resolution, as there seems to be no limit to the refinement of the physicist in his dissipation of masses into molecules, and molecules into atoms, and atoms into sub-atoms, and so on without end. There is a wonderful curve known as the curve of Weierstrass, that prince of mathematical exactness. At first sight it would look like an ordinary smooth curve of sines, such as you see when you shake a line that is fastened at one end, or as when you snap a whip-cracker. But on scanning it closely you would see that it was not smooth but undulatory up and down like a sea-surface or the asphalt pavement of a New Orleans street. On looking at it still closer with a microscope you would see that each little undulation was wrinkled with a host of other still smaller undulations of the same kind; and each of these in turn under a still more powerful microscope would shiver into still smaller undulations, and so

on forever. But the curve is meanwhile one, precisely given by its definition.

So too the indefinitely fine subdivision of the physical world by the physicist does not militate against its unity, which he is compelled to reconstruct in thought. Accordingly we may hold confidently that the spiritual universe is a coexistence of many in one, and you who like mathematics may find a much clearer, more beautiful and more convincing analogy in an algebraic equation connecting  $a, b, c, d \dots x, y, z \dots$ , holding them all clasped together in a mental unity, while respecting the individuality of each one. Nay, more, you know that you can often solve such an equation, that is, you can express one symbol, one of the magnitudes, in terms of all the others, and even when you cannot solve the equation, that is due only to the inadequacy of your mathematics, you may still think of and deal with the equation as if it were solved. When it is thus solved, the original equational relation is not changed, it is the same as before, but it now consists in declaring that  $x$  (for instance) equals some expression involving all the other symbols in some definite combination. Thus the one symbol  $x$ , so expressed, through the other symbols, is the equivalent of the whole original equation, certainly a striking illustration of the identity of one with all.

So, then, by this long and toilsome path we reach this conception of the universe, of the spiritual universe, the original whereof the physical universe is each man's construct or picture, constructed or painted *according to each man's ability* as an artist. This spiritual world we think of as *one*, as a garment of life and thought and feeling and will, a garment woven without seam from top to bottom. *Woven* did I say? Nay, not so. Goethe does indeed put these noble lines into the mouth of the Earth-Spirit:

"Through Time's whirring loom so the shuttle I drive  
And weave of the Godhead the garment alive."

But the living vestment of Deity is not woven, the image is imperfect. As the shuttle flies back and forth it lays the threads side by side, and no matter how close, they are still distinct, like the lines of a diffraction grating. But the living vesture of the Deity is not thus woven, there are no threads, however close, side by side. The garment of the Godhead is a *continuum*. It is like a line, which is not made up of points no matter how dense you may crowd the points together.

It is very tempting to enlarge upon this beautiful and wonderful notion of a continuum, but the time is short and concise subtlety might repel you. It is enough for the present to know that the straight line between two points A and B is a *continuum*, as containing not very many points compacted, but *all* positions that a point would need to take in passing straight from A to B without making any jumps whatever. Such is the continuum, one of the most important of all exact human concepts. As some such continuum we conceive spirit to be, not of course as a line nor as a surface, nor the like; these space- and time-continua are only the constructs that image or symbolize the activities of the spirit-continuum.

As it is once for all our nature to think all things in symbols, especially the deepest things, even as Goethe has said: "The deepest can be said in symbols only" (*Das Tiefste lässt sich nur symbolisch sagen*), it may be well to have some sense-image of the spirit as thus conceived. The sea-surface or a vast spherical flag may partially serve the purpose, a sea-surface heaving now in the light of consciousness, now in the dark of subconsciousness, a flag sunlit here and there in its swells and elsewhere shaded in endless degrees, iridescent as the rainbow, and gleaming

and glooming beyond the day and the night. But the flag and the sea-surface are both continuous and unrent, one and indivisible. You have doubtless seen a very ordinary flag floating lazily from the mast of an anchored ship, while the smooth face of the water swayed in a thousand oscillating mirrors below; and you have noticed how the flag was reflected in a thousand distorted and fragmentary images in the waters beneath; the fragments were distinct and a great multitude, but the flag was one. So in the world-image of the spirit we behold millions and decillions of separate forms, the stars and skies and earth and ocean and stones and trees and men; and again, though the images are countless, the spirit that is imaged is one.

It is this unity of the spirit that lies at the basis of all history, of all life, of all science, of all morality. It is because all thought is ultimately one, that we can have a doctrine of logic; because life is one, we can classify and develop a biology; because all soul is one we can have an ethics, both a theory and a practice of morality. In fact, all morality rests upon sympathy, as Adam Smith so deeply divined, and as Sutherland has so clearly illustrated. But sympathy and love, which are the regnant facts of social life, are only forms and specializations of unity, of oneness with our fellows. Behold then the reconciliation of egoism and altruism, of selfishness and unselfishness. The great logical advantage of the egoist has long been felt and was set forth by Plato with tremendous energy in the first books of the Republic. The young logician excites the utmost admiration of Socrates, who feels that it is impossible to confute him without going back exceeding far into ultimate questions. Indeed, he is irrefutable so long as we retain the ordinary notion of self. It is only by an immense expansion of this concept that we gain a coign of logical vantage. Altruism can overcome egoism only by ingurgitation, by swallowing it alive. By this process alone the



antagonism is removed. Yourself is in truth your only object of interest or obligation, but only yourself in its largest and only proper sense. But this largest sense extends your self throughout the world, even as the complete definition of the wavelet must extend the wavelet over the whole sphere. You cannot wrong your neighbor without wronging yourself, for behold your neighbour is an aspect of your own universal self.

Now the logic of the situation admits of no escape from these conclusions, but it is one thing to know and it is quite another to *feel*. Logical conviction may be attained and yet leave us cold and lifeless. The head may be converted and the heart remain unmoved. It is for the *feeling* of Universal Unity, the consciousness of the cosmic Self, the enkindling, ennobling, enlightening, inspiring sense of the world-soul, of pan-psychic selfhood that I plead to-night. To be sure, the development, the birth, the growth of any such sense is not the affair of a day, of a year, of a century, or even of a millennium. It is the growth of myriads of years, it is the child of everlasting time. But this need in no way surprise us. How long has any and every sense, by which we construct the world and depict the spirit, been in growing? Did all your remote ancestors have such glorious orbs of light as those wherewith you build up about you the wide roof of the heaven, and the steadfast footstool of the earth? Could the Ninth Symphony have been heard by your forest-ranging forebears or their own progenitors that huddled in the lap of the sea? Nay, your ancestors, that is you yourself at that early dawn, had no specific organs of sight or hearing; you had only a more or less sensitive surface with perhaps here and there a spot of especial tenderness. Neither had you any definite sense of beauty or duty or truth or right. All of these you had then only as infinitesimal germs, now they adorn you as the diadem of your being. So too the world-sense, the



consciousness of your universal selfhood, exists with you as only the feeblest spark, but the breath of time shall fan it into heaven-ascending flame.

Some, though, may question whether there is any such sense at all, however nascent. None the less, the proof of the fact is overwhelming, the indications are numberless and unequivocal. No one can look far back upon the vista of the vanished years and doubt that the moral sense, the feeling of obligation, has been growing steadily through all that undistinguished lapse of ages. We need not go back to the *amœba* in this exploration. We may stop at our ancestors of only a few thousand or even hundred years ago, and we shall find there only the feeblest sense of brotherhood, extending only to the family or at most to the tribe. Within that narrow circle there was a sense of duty, of right, but not beyond; the stranger was the enemy, to whom nothing was due. But now we recognize not only our duties to all men but also our obligations to the dumb brutes of the field. We organize societies for the prevention of cruelty to animals, and there are at least some in whom buds the feeling of obligation to the plants. Meanwhile we continue not only to extensify but also to intensify the feeling of obligation, which is a budding sense of our life as not merely narrowly individual. No matter how much your views may vary in the present war, you must unreservedly admire the immeasurable spontaneity with which the attacked countries have leaped to the defense of the national life in danger; even the English, that most insulated and individualistic of the great peoples, have at length roused themselves to intense national consciousness, and now rallying throughout the length and breadth of their earth-wide empire, they present a seamless and continuous front to the foe. Contrast herewith the state of the world ten thousand years ago, when the largest people would hardly measure up now to our smallest, when the bulk of the population

consisted of vagrant groups of a few hundred or perhaps thousands, and the immense strides of human consciousness toward solidarity must become evident. Consider also the great international movements that meet us on every hand, the universal congresses that gather more and more frequently in our great cosmopolitan cities, above all consider Social Democracy, beyond doubt the most impressive of recent political phenomena, and it seems impossible to mistake the indications that we may now behold the faint purpling over all the tree of human life, which betokens the putting forth of a new and glorious foliage, the faint streakings of the dawn of a broader and brighter day.

Some one may say all this is but the progress of civilization. Perhaps; but what is civilization? May we not now perceive it in a clearer light as the history of the birth and growth of the world-consciousness, the progressive reconciliation of the Many and the One? There are many other aspects of this matter that deserve presentation, but I have chosen only a few and these perhaps not the most impressive. Hastening on now we must not fail to note that this burgeoning sense of worldhood has already come to premonitory recognition in the consciousness of many of the noblest sons of earth. Naught else indeed inspired the great Stoic idea of universal humanity, of the world as one living being, of our citizenship in heaven. The same high note is heard as an overtone all through the dissertations of Epictetus and the meditations of the noble Emperor Aurelius (after whom our own city of New Orleans is named). It is the same great thought that inspired Giordano Bruno and upheld his spirit unbowed even at the stake. It is the same that animated the illustrious Spinoza, the God-intoxicated Jew of Amsterdam, of whom alone among men Schleiermacher could use these words: "Offer with me reverentially a lock of hair to the manes of the holy but proscribed Spinoza. The Divine Spirit transfused him,

the Infinite was his beginning and his end, the Universe his only and everlasting love. Into this eternal world he mirrored himself and saw how he was its noblest mirror. Full of religion was he and full of a holy spirit, and therefore he stands alone and unrivaled, master in his art, but exalted above profane society, without disciples, without even citizenship."

Yet, though without disciples, it was the spark of his spirit that enkindled the greatest minds of Germany, such as Lessing and Herder and Schiller, and chief of all Goethe, in whom we find the sense of oneness with the world the liveliest of all. It would be easy to quote by the hour in proof hereof, but the time is nigh out. Consider only a few of the Xenions of Goethe and Schiller (so beautifully translated and published of late by Dr. Paul Carus), such as,

"Strive on much as thou mayest, thou standest alone there forever  
Until Nature the Strong knitteth thee unto the whole."

And again:

"Let none equal another, yet every one equal the Highest!  
How can that be? Let each one be complete in himself."

or this from Faust:

"How each to All its being gives!  
One in the other works and lives."

If now we pass on in haste to Wordsworth, the poet-child of Spinoza, we shall find that this thought of the oneness of man with the world has transfused all his writings and often uplifted an otherwise unsoaring nature to the highest pinnacles of poesy, as when he declares,

"And I have felt  
A presence that disturbs me with the joy  
Of elevated thoughts; a sense sublime  
Of something far more deeply interfused,  
Whose dwelling is the light of setting suns,  
And the round ocean, and the living air,  
And the blue sky, and in the mind of man:

A motion and a spirit, that impels  
All thinking things, all objects of all thoughts,  
And rolls through all things."

Such illustrations might be multiplied almost without end, and they show clearly enough that we are here dealing with a profound reality. It is the same nascent consciousness, the quickening and awakening sense of world-oneness, of the divine eternal unity of the All, that not only informs our science, and grounds our morality, and directs our world-politics and all the collective processes of our civilization, but also inspires the oracles of our most philosophic and deep-thoughted poets.

And does any one believe that such a process as we have thus detected can stop now and here or anywhere short of its far distant, its ever unattainable, but yet ever more and more nearly approachable goal? Surely not. It must go on and on forever; the faint purple flush must deepen into richer and richer bloom. Nothing is more absurd than to imagine that the dawning consciousness of the world has more than begun to open its eyes; it is yet but a babe in arms, peeping out upon the world in inarticulate wonder. We cannot indeed foretell the course of its growth, we cannot trace out its way beforehand, it may rush out into the most unexpected paths. But one may be sure it will grow and perhaps at an astounding rate. No one beholding some ascidian ancestor of man ten million years ago could have foretold its descendant with eyes and ears that organize universes of light and color and of melody and harmony, and with still more refined senses of the true and the beautiful and the good that build up unending palaces of exact thought, and colossal fabrics of social and political polity, and far-shining temples of plastic art, and star-pointing pyramids of song. Verily the step seems longer by far from such remote ancestry to Goethe or Wordsworth or the average man of to-day than from him to the over-

man of myriad years to come, who will clasp the universe to his heart in the nuptial rapture of a consciousness divine.

And now finally we may touch the inmost nerve of the whole matter. In the minds of every one of you perhaps has arisen the question, "But what has all this to do with death?"—the all-important matter, death, which, Seneca says, is the fairest invention of nature? Much every way, as we shall now see. It was August Weismann, the greatest continuator of Darwin, who in his essays on heredity called emphatic attention to a native immortality of the elementary life-form, the cell. When the single-celled organism grows to a certain size it splits in two, and each of the cells goes on living and growing as before; and so on, just as long as the outer conditions of life are present. If the cell dies, it is from some form of accident, and not because it has run its life-course.\* The reason of the splitting in two, the so-called spontaneous fission, is to gain greater nourishing surface with the same volume, for two cells of a given shape and containing together a certain volume have a greater surface than one cell of the same shape and the same total volume—an extremely important principle on which we cannot dwell. In the interest of better nutrition cells have kept on dividing and gradually have become specialized in their functions. These specialized cells constitute the body and by becoming specialists have lost their inborn immortality. Meantime the continuous germ-plasm, as Weismann calls it, lives on and grows unceasing through the ages.

Such *very* briefly is the great biologist's doctrine. He, of course, is speaking and very properly speaking of the physical organism solely. We have learned not to disparage this organism in the least, rather to revere it, but at the same time to understand it, as not a thing in itself,

\* More recent observations would seem to amend the contention of Weismann.

but as a construct of spirit, as a sign, a symbol, a spatial image of a long series of soul-experience. Well, then, for us the physiologic process called the death of the body is a process taking place not in the world of spirit, of soul-experience, but in the world of the *symbols of that experience*. When the body B dies it does not mean that the corresponding spirit S dies, for there is no meaning in the words "a spirit dies"; neither does it mean that a spirit S has forsaken a body B in which it has been dwelling. The notion that a spirit dwells in a body is a very ancient, very venerable notion, to be treated with great respect; but it is not correct, it is an old-world form outworn. No spirit dwells in any body. Your own body and all the world you see is the construct or outward symbol, which you form at every instant, of your own experience; the bodies of your friends are the signs or images of other spirits with which you are at every instant related. If then your friend dies, the meaning is not that the corresponding symbolized spirit dies, by no means, but only that a certain aspect of your own experience is no longer representable under the image or symbol of your friend's body. For mind you, that friend's body was a construct of your own experience, it was a way of representing another spirit with which you were in the intimate relation called friendship.

But you ask, if this spirit-friend is no longer constructible by me under the form of a body, does it not mean that *some* profound change has taken place in that spirit or in my relation with it? Yes, so much seems to be indicated, but not more. That spirit has changed profoundly its relation to you and its other fellows, but it has not died, for death is a term that has meaning only as applied to physical constructs formed by spirits and corresponding to spirits, but not as applied to spirits themselves.

This fact comes out clearly only when we bear constantly in mind the nature of spirit as a continuum and as

a unit. The death, the dissolution, the ceasing to be of such a continuous unit seem quite unthinkable, it would be nothing more nor less than the extinction, the annihilation of the universe, of all that is.

And now at last we come to the final question of the individual conscious existence. We cannot argue but must merely assume that consciousness is the highest stage, yet known or developed, of spirit activity, and that self-consciousness is the highest stage of consciousness. It may sound strange, yet it seems to be the greatest general achievement of the human spirit, that which marks it off most distinctly from all other spirits mounting upward through the spires of form, to be able to say, "It is I." Toward this self-consciousness we may behold the soul struggling through all the ages of the past. But now that this pinnacle is attained, is the onward and upward march to stop? By no means! The path still leads on higher and higher. "Hills peep o'er hills, and Alps on Alps arise." As men we have reached the consciousness of ourselves as individuals, but only as individuals, only in apparent isolation and insulation, as of things in the physical world. In such insulation and isolation we are finite and bounded in time as things are finite and bounded being separated in space.

And precisely herein lies the key and significance of our mortality. It is the symbol of the insulation and isolation of the individual spirit that has attained or is attaining a consciousness and even a selfconsciousness, but has not yet attained a universal consciousness. It is the mark of a spirit that can say "It is I" and "I am Some," but not yet "I am All." Such a spirit that has not yet risen to World-self consciousness, but feels itself as only one among many and not yet as one that permeates, transfuses, unifies, and comprehends all the Many, such a spirit must objectify, externalize, and construct both itself and all its fellows as



finite, separate, individualized images, which we call bodies bounded in space and bounded in time, and death is the sign or symbol of this latter definition. But the spirit that rises inexpressibly higher, soaring as on eagle wings above and beyond self-consciousness, mounting aloft to the glittering peaks of World-consciousness divine, that spirit leaves death behind.

A mystic or religionist might say, that soul pillows itself upon the breast of God, but we use not here the language of mysticism or religion. We shape our words to fit the soberer doctrines of development, of the gradual unfolding of the higher forms of life, of the continuous exaltation of psychic experience, through all the endless grades of soul-activity, ever upward and upward to the highest self-consciousness of man. And here not only do we find it logically impossible to stop, but we have found that the general direction of spirit growth as it now shows itself among men is steadily set along the whole front of progress toward the enlargement and, we might say, the solidarification of the individual into a general consciousness. We have seen that under this sign the great historical movements, whether of science or art or politics or of social, industrial or commercial enterprise, take on new meaning and are stamped with the signet of cosmic significance. We have seen also that the choicest spirits both of ancient and of modern times have foreboded the movement of which we speak, have foreseen its goal, and have flung themselves gladly into its current, as it were into the drift of the stars.

Yea, too, they have felt, though unable to justify the feeling, that on this path alone was it possible to seek for triumph over the last enemy, death. Says Goethe:

"Art thou affrighted at death? and yearnest for life everlasting?  
Live in the whole! When thou long hast departed, it stays."

Similarly the deepest-thoughted of recent poets, George Meredith:



"Our life is but a little holding, lent  
To do a mighty labor; we are one  
With heaven and the stars when it is spent  
To serve God's aim; else die we with the sun."

But you will readily recognize the oracles of both these seers as dubious and at best only half correct; for neither has any inkling of the scientific and philosophic truth that his words darkly adumbrate. Similarly Tennyson tells us, "the individual withers, and the world is more and more."\* But the truth they miss is that cosmic history is the process of unfolding, of growing, a psychic experience that passes on up to consciousness and to self-consciousness and does not stop there but expands and ascends ever wider and higher to universal self-consciousness, to the realization of the world-selfhood, the identity of the individual with the universal, a consciousness that transcends death, because it removes the bonds and the bars of which death is the sign. There is nothing Utopian, nothing visionary in the prospect here set forth; it is in line, as we have seen, with all the surest teachings of the austerest science. A hundred illustrations lie at hand, but only one have you patience to hear. When a one-celled organism splits in two, we must suppose the physical fact images some psychic process of too low an order for us to name, something *most distantly* akin to a feeling, to the mother-instinct of a bird or a dam that flutters in agony about her brood or defends her offspring with her own life. Perhaps it is thence a still farther cry to the intense love of the human mother, who loses her very being in her child and finds herself again therein and hardly less in her grand-children and even in remoter descendants.

Now as this lofty triumphant feeling of love is an absolutely uninterrupted outgrowth from the nameless sub-sub-feeling in the single cell, unless we make the impossible

\* Especially notable in this connection is the allegory of Mr. Herbert Trench, *Apollo and the Seaman*.

supposition that history is to call a halt in its forward march and henceforth retire or spin round in a circle, it must be that this feeling will grow as the ages roll on, into higher and higher super-feelings that shall identify the life of its descendants, that shall expand and intensify the parent consciousness and the parent love unendingly through all generations to come. Such is only one of a million paths along which the enlarging consciousness pursues its steady and unceasing march toward the infinite and immortal world-consciousness which is its heavenly goal. Even as a wave of the sea issuing from a pebble thrown into it spreads wider and wider till it compasses the whole sphere and gathers itself up in the opposite pole.

"Reflection," says the Dhammapada, "is the path of immortality; thoughtlessness is the path of death." We must amend the wisdom of the Indian sage. It is consciousness that is the path not so much of immortality as of eternity; not mere narrow self-consciousness, but the consciousness of the larger Self that radiates over the Whole and sees and feels that it is itself the world and that its fellows are each of equal right the world. Herein lies no contradiction, for the modern doctrine of the infinite, grounded by Bolzano and developed by Cantor, Dedekind, Keyser and others, shows clearly how the parts of an infinite may each equal the whole. Such then is the path to immortality, the way to eternal life. Not indeed a narrow path, but the wide-expanding sweep of advancing consciousness, which flashes upon us here as science and there as art and yonder as democracy and liberty and equality and justice and culture and morality and self-sacrifice and virtue and truth and love and everywhere as philosophy, the guide of life. All of these, by no means excluding the lower but no less essential aspects of trade and commerce and industry and wealth and amusement and social enjoyment, all are but manifold phases of the brightening, ex-

panding, ascending individual consciousness that more and more will burst all bounds, above, below, and uplift itself to the Universal and Eternal Whole.

Of course there are many objections you could urge, not many perhaps that have not already been pondered. But these would require the introduction of a new order of notions, for which there is now no time. Enough that a rational interpretation of cosmic history opens before our eyes an increasing prospect for humanity, a vista that broadens and brightens unto perfect day.

WILLIAM BENJAMIN SMITH.  
TULANE UNIVERSITY, NEW ORLEANS, LA.

## PREDICAMENTS IN PHILOSOPHY.

PROFESSOR Lovejoy's address before the Philosophical Association last year expressed the suspicion that "something was the matter with philosophy" and returned to criticism and discussion as the way out of the difficulty. It offered nothing constructive in the solution of the problem. "Criticism" is only a euphemism for scepticism, and while scepticism is a necessary weapon in that field, it is not the method of making philosophy. Philosophy began under the discovery of illusions and scepticism was the means of discovering and exposing them, but it was not the method employed by such men as Plato and Aristotle in their constructive work.

There are three functions which philosophy can perform, two of them not being adequately distinguished from each other and not occupying as much attention since Kant and Hume as the first one. They are (1) *Criticism*, (2) the *Acquisition*, and (3) the *Communication* of knowledge. Criticism is the means of breaking up dogmatism and stagnant ideas in our thinking. Acquisition explains itself, while we too often forget the difference between it and the conditions for communicating what we have acquired. Criticism adds nothing in content to knowledge. It only demands clarification and perhaps certitude, though it does not supply it. Communication adds nothing, but transmits what has been acquired, while acquisition is the means of discovery and addition.

I cannot enter into the analysis of the problem of "knowledge" at any length. That would take us far into epistemology and it is only a part of the general problem with which we are concerned here. But I must call a brief attention to the equivocal import of that term, a fact which neither Kant nor Hamilton seemed to have noticed, or to have sufficiently allowed for, if they did notice it. The term "knowledge" has two very different conceptions for which it does duty. The first is *unity* and the second is *certainty*. Or the first is unification, classification, relation, and the second is certification, certitude, assurance. If we can only keep these apart in our discussions, we would quickly come to agreement in our problem. But we are perpetually confusing them and committing fallacies as evident as in the paradoxes of Zeno about motion. Hamilton defined knowledge as *relation* and Herbert Spencer followed him. It was easy to see in this conception why he denied any "knowledge" of the Absolute. It was not comprehensible in terms of a higher genus. It was not classifiable, or unified with a more general concept. It was the *summum genus* itself. But Hamilton sought certitude for the fact of the Absolute in *Faith*, and this was opposed to "knowledge," an opposition quite clear on his definition, but absurd on the definition that "knowledge" implied certitude. Hamilton, however, while correct as to the scholastic use of the term "faith" did not see that it, too, was equivocal. It did duty for the most certain thing in consciousness and also for the most uncertain things, namely, dogmas that required proof or some means of certification. Hence the attack of Mill upon him without discovering exactly what Hamilton was after. If Hamilton's doctrine had not been invoked in the defence of theology it might have been either disregarded or admitted as harmless. It was at least perfectly logical and irrefutable as reasoning on his premises. The point of criticism should have been

against his definitions or assumptions and not his reasoning. It was Descartes that suggested the definition of *certitude* for the term, as his doubt was convertible with uncertainty, and whatever other conceptions may have lurked in his employment of the term, that of certitude was reflected in his position and became permanently embodied in its use. There and then the conflict began between "knowledge" as *relation* and knowledge as *certitude*. We shall see the importance of this later.

But what is the problem of philosophy? Most people, perhaps all, would answer, the "knowledge" of Reality. But what is reality? One answers *phenomena* and the other *noumena*. One says sensory data and the other supersensory data. But at this point the problem divides further into the *process* of "knowing" them and the *object* of "knowledge." This gives rise to epistemology along with metaphysics. Epistemology is concerned primarily with the process and metaphysics with the object of "knowledge." But in fact the two cannot be separated except logically, so to speak, and we have always to have reference to both in the philosophic problem as a whole. At one time it comprised the whole field of things known, but became limited by the development of the special sciences and in that way was left the dowry of the insoluble problems of the universe. The consequence was that, in leaving the determination of facts, the acquisition of "knowledge," considered in terms of its objects, to science, it was confined to the criticism and analysis of these data and to the exposition and communication of ideas while the discovery and acquisition of them was made subordinate. In criticism and analysis scepticism either served as the basis or was concealed behind an effort to clarify concepts. The constructive function of philosophy was lost in the effort to find its elements. But the problem is complicated and requires preliminary analysis of its aspects.

Let me state, therefore, some important facts and distinctions with which I undertake the analysis of our problem. (1) There are the separate and yet connected problems of the *acquisition* and of the *communication* of "knowledge." Psychological question and processes are involved, but these two problems are mainly occupied with the *content* or matter of "knowledge." (2) There is the problem of *certitude*, as complicated with both acquisition and communication of "knowledge." This, too, involves psychological processes, but puts the stress of thought on the *modality of judgment*, or the degree of assurance connected with the state of mind involved. (3) There is the problem of the personal equation in acquiring and communicating "knowledge." This concerns the question whether the subject is a visual, an audile, or a motile, or the problem of the center of reference for the connections and assimilation of experience. (4) There is the problem of the formulation of "knowledge," or the embodiment of it in language which will convey it most intelligently.

Now if "knowledge" and certitude are made convertible in meaning, the first and second problems are the same, but the distinction between acquisition and communication will remain. The third problem will concern the psychological peculiarities that affect the representative ideas of the subject and will determine some, if not all, the differences of opinion that arise in the discussion of fundamental problems. The fourth is a problem for communication, not for acquisition.

Now the modern philosopher, perhaps the ancient philosopher also, is less an inquirer than he is an expositor or teacher. When he was the discoverer and depository of all the "knowledge" men possessed, he had no competitors. He was the wise man in general and had no special problem. But the off-shoots of his general information in the sciences have deprived him of the monopoly of

"knowledge" and left him a purveyor rather than an investigator. As a communicator of "knowledge" he labors under limitations which the discoverer does not. He must adapt himself to the experience and limitations of his auditor or reader. He must impress his ideas in the mould of another intelligence, even though he has to modify or abandon the terminology of his natural habits in thinking. He must employ *ad hominem* methods. Communication involves social categories affected by the personal equation of the receiver. Acquisition is not a social affair. It is individual and may employ methods that are difficult to convert into transmissive agencies. This will be apparent as we proceed.

The wide general problem of knowledge is the unification and the explanation of facts. Perhaps we could say the unification or explanation of facts, according as we accept the wider or the narrower meaning of explanation. But the problem is to make the world of experience intelligible and the question is how this is done. What are the conditions on which the mind proceeds in doing this?

In answer to this question, preliminary to the discussion of the difficulties of the philosopher in his appropriate work, I may reduce all these fundamental principles to one general root: namely, that of *causality* with allowance for its divisions and for nomology. I use the term causality in its widest sense for the moment and shall notice its divisions presently. I must mention nomology as concerned with the laws of things and as not entering into final explanations, whatever relation it may have to practical questions. It is *par excellence* the function of science, whatever else may be conceded to that department of intellectual activity. But causality is the fundamental conception on which all philosophy is built and it is divided into two branches. I shall call them *efficient* and *material* causes. The former is the usual conception of the term outside technical philo-



Causality.	Causa efficiens. Ratio fiendi. (Aetiological)	Internal. Subjective. Free. External. Objective. Determined.
	Causa materialis. Ratio essendi. (Ontological)	Identity. { Numero eadem. Unity. Arte eadem. Similarity. Difference. { Numero diversa. Arte diversa.

In the pursuit of "knowledge" we may not try to go beyond the phenomenal or nomological aspect of things

and so may content ourselves with the uniformities of co-existence and sequence. Practical life may not demand more than this. But this depends on the question whether metaphysics may or may not involve "higher" practical questions than mere nomology. Whether it does or not, it is certain that there are mental interests transcending the mere laws of events and "knowledge" seeks realization in both aetiological and ontological facts. But as we have shown there are two separate problems here. The first is the acquisition of "knowledge" and the second is the communication of it.

Now how do we acquire "knowledge"? The brief answer to this is that, in so far as it is systematization of experience, we acquire it by the application of the principles of causality in their wider sense. When we see a fact or phenomenon, we either relate it or explain it, or both relate and explain it, assuming that "explain" here is convertible with assigning its efficient cause. In frequent use, "explanation" may be or is reference to a class, or even showing its law. But here I am using the term, at least for the moment, as the equivalent of assigning the cause. I am never satisfied with the mere event by itself. I must connect it with something else to explain it, if I am to understand it. I relate it to its kind, its material cause, or I refer it to that which *produces* it, its active or efficient cause. Classification explains unity; causation explains occurrence.

In ascertaining how we acquire "knowledge," we come to the question as to what it is. This can be answered in two ways. (1) We may name and analyze the processes of it. This is epistemology and psychology. (2) We may examine the deposit in language which is the result of the process. We may have briefly to speak of both of these. For my purposes, sensation and judgments may constitute the psychological sources of "knowledge," one of them

representing it as *having* a mental state and the other as *asserting* a fact or truth. Usually "knowledge" is convertible with certitude of conviction, whatever its source. Sensation and judgment represent the distinction between the given and the asserted. Sensation is experience; judgment is connecting experiences. Both may be "knowledge," but sensation is *having* a state of consciousness as the result of stimulus; judgment an act of relating a fact of experience, and represents usually the conception of "knowledge" which the philosopher has in mind. In acquiring knowledge you use both sensation and judgment; in communicating it, you can use judgment alone, and only one type of that. The sequel will show us this. "Knowledge" in sensation is presentative and has certitude of the immediate sort. But "knowledge" in judgment will have degrees of certitude to be determined by criteria which we do not need to discuss here.

Let us, then, take up the problem of judgment and study it in the forms which it takes in language which represents the petrified forms of thought and may be made to reveal the processes implied.

Sigwart has eight forms of judgment and for some purposes this or any other classification of judgments may be legitimate. But I reduce all of them to two types, which I call *intensive* and *extensive* judgments. Intensive judgments embody the connection between *substance* and *attribute*; extensive judgments the relation between *genus* and *species*. "Snow is white" and "John struck James" are intensive judgments, the one static and the other dynamic. "Iron is a metal" is an extensive judgment. Every possible form of judgment can be reduced to one or the other of these two types, and indeed each of the two is convertible into the other. For instance, "Iron is metallic" is the intensive form of the extensive judgment, "Iron is a metal." Extensive judgments embody the idea of *causa materialis*,

of identity in affirmative and of difference in negative propositions. Intensive judgments embody the idea of *causa efficiens*, objective and mechanical when phenomenal, and subjective or free when noumenal, the latter with some qualification in the use of the term "free." The principles here involved show how we think in the presence of a fact of experience, and illustrate how we explain the origin and the nature of facts. They are the basis of all acquisition, whatever may be the basis of communication.

"Knowledge" begins with sensation and perception, if we mean by it *having* a mental state, and if we give it no other meaning it stops there. Judgment is relating and assertory "knowledge." It unifies or classifies and explains or causifies facts of experience. We unify or classify by extensive judgments and explain or causify by intensive judgments. We acquire "knowledge" of fact by immediate perception or having it in consciousness, but we acquire relative "knowledge" by the two types of judgment, while we *communicate* it by only one of them, the extensive. Let us further examine the process of acquisition.

A complex concept, that is, a synthesis of attributes, is the result of judgment and hence acts of judgment precede the use of terms in propositions. As the extensive judgment involves comparison of two or more facts or things, it is the later form to develop. The intensive judgment is the most primitive, though in its later form it involves complex concepts for the subject. It is based upon the aetiological principle. Being the most primitive form of mental action after sensation, the simplest illustration of it is the *impersonal* judgment. "It is warm," "It is cold," "It rains," "It is fine," etc., show the intensive judgment in its first and ultimate form. What we have is sensation, and we apply the category of causality, efficient or aetiological causality, to it in the indefinite form. The term "It" is merely the indication of a subject which we do not

name or imply by any special property other than the one concerned in the present experience. The subject is the most general possible, and so far as knowledge is concerned may not have any property but the one in presentation. When we have found a synthesis of qualities we employ a name for them, and the property expressed in the predicate is a new one, or not necessarily implied by the name, at least until the additional property becomes an essential attribute of it. When we have found that the "It" is a complexus of other attributes than the one in immediate perception, our concept denotes that synthesis. For instance, "Apple," "Iron," "Tree" etc. Intensive judgments are involved in forming them and any future reference of a quality to this same subject or synthesis involves another intensive judgment. We are not comparing attributes or things in this process. We are referring events, phenomena, attributes, qualities etc., whether static or dynamic, to a subject in which they inhere. The principle of causality, aetiological causality, is used to make the facts intelligible. We are superposing a category on a fact. In the impersonal judgment, this cause or ground is not named in terms of any other properties than the one in present experience. In other forms of intensive judgment, the subject represents a given synthesis already formed and the predicate is a quality on which we wish to lay stress.

All this means that aetiological conceptions are prior to ontological ones in the process of "knowledge," *ratio fiendi* to *ratio essendi*. The result is that the acquisition of "knowledge" involves contact with facts of experience and offers the way to constructive processes, while communication involves nothing constructive for the mind that is imparting "knowledge." It is analytic and construction is synthetic.

I would not object to expressing the facts in terms of phenomenal syntheses. That is, I am willing to put myself

on the basis of pure empiricism, so far as the present contention is concerned. The synthesis may be merely a connection between phenomena, if you like, though I might reserve the right to raise the question whether subject and predicate involve the connection between phenomena at all. But conceding the empirical point of view, we should seem to dispense with the idea of causality or ground, or to make it convertible with coexistences and sequences of events. This, however, would not alter the problem of acquiring "knowledge." It only evades or postpones the question whether there is causality or not. One thing, however, it does correctly enough. Construing "knowledge" as *having* a mental state, it evades the scepticism which attaches to the discussion of the validity of causality. But it does not alter the relation between subject and predicate in intensive judgments, which express ideas in terms of inherence.

The main point, however, is that intensive judgment is the first in the order of "knowledge," as embodying the connection between substance and attribute, ground and property, or the primary idea of causality. The extensive judgment comes second. It absolutely requires two facts for the formation of an assertion. These facts must resemble or differ in order to have the judgment formed. In the intensive judgment comparison does not enter, or is not a necessary part of it. In the extensive judgment this comparison is an absolutely essential condition. The synthesis of intensive judgments is that of the organic unity either of an attribute in a subject, definite or indefinite, or of several attributes in the same subject, unity in time and space, if phenomenal, and unity in time and space plus causality, if noumenal. Sameness of subject depends on the synthesis of qualities in the same time and space; differences of subjects depend on synthesis in different times and spaces. But the synthesis of extensive judgments

depends on the unity of *kind*, identity or similarity, regardless of time and space, and causality or ground may be disregarded, though actually present. Thus we establish greater unity of nature in the cosmos by the extensive judgment, and hence it simplifies the *use* of "knowledge."

In the acquisition of "knowledge" by these processes we are in contact with facts of experience. The methods of observation, experiment, classification and explanation are employed and we may not be communicating truth at all. We are simply having sensations and perceptions of facts and superposing categories on them, or seeing them under these principles of "knowledge." In the intensive judgment we are superposing the idea of efficient causes on the facts and in extensive judgment superposing the idea of material causes on them. We are simply exercising aetiological and ontological categories in the processes of explaining and unifying experience.

But when it comes to the *communication* of "knowledge," we can employ only material causes in the act of transmitting it. We may use intensive judgments as well as extensive ones, but we are social beings when we do it and are transmitting rather than acquiring information, and in spite of employing intensive judgments we must rely upon the identity of experience in others with our own to "communicate" at all. The individual can acquire "knowledge" by both processes, as indicated, but he can transfer it only by one of them and that is the principle of identity and difference or material causes. This is the reason that definition and ratiocination are so necessary. If we cannot reproduce identical experiences in the party to whom we wish to convey information, we must press our ideas into the mould of his experience. Without the facts of experience or the power to imagine them, the other party would not use the category of aetiological causes, but must rely on his experience to make communication



intelligible. The slightest difference between them will frustrate the transfer. *Causa efficiens*, and perhaps the second branch of the *causa materialis*, cannot be used in communication. The individual in that case must have his own experience. Communication is only an economic device to save time and experience in education, and it does not wholly divest the subject of responsibility for his own experience and thinking. It is successful in proportion to the amount of personal experience. In fact this is the case in all instances, as experience is the primary condition of intelligent receptivity, and communication can occur only in the realm of abstract ideas, not in those of the concrete. The receipt of concrete "knowledge" is a matter of individual experience and it cannot be transferred. This fact puts communication under greater limitations than acquisition. Communication is limited to the *causa materialis* of things.

The best proof of this is the fact that *no syllogism can be constructed out of intensive judgments*. There must be at least one extensive judgment in every syllogism, in order to secure a middle term, or identity of middle terms. The syllogism is to impart conviction or certitude and it can be done only by means of the principle of ontological causes, identity for affirmative judgments and difference for negative judgments. No principle of aetiological causes can be employed in imparting this conviction. Only the individual can apply them to the facts of experience. We cannot make him see this. But by the principle of identity and difference, we may force him to see a conclusion, as it is expressed in the mould of his previous experience. The conclusion is but an instance of the belief he has in general and the certitude transmitted is in direct proportion to the certitude of his premises. The existence of causality, aetiological causality, cannot be imparted to him either by judg-

ment or ratiocination. He must be able to see and apply this for himself.

Now for the application of these general truths to the practical situation.

The philosopher in most cases is not a scientific investigator. He is so generally a teacher, or transmitter, that he gets into the necessary habit of communicating "knowledge." He is not always in contact with concrete facts. He is always trying to make things intelligible to those of less information than himself, and even when he is a scientific inquirer, he is condemned to the use of material causes in his discussion and communication of truth. He has to make his information fit into the experience of others. He has always to employ *ad hominem* methods. He cannot always, if ever, use *ad rem* means in imparting truth. He must embody all his information in the principle of identity to transmit it, as is clearly proved by the instrument of language and the syllogism. If no language embodying this principle of identity exists, no communication is possible. Even mimic art conforms to this and depends on the principle of identity for its effectiveness. But the habit and necessity of employing this principle of identity, whether in judgment or ratiocination—and ratiocination is only a complexus of judgments—*create the tendency to interpret the world by this principle alone*. The condition of communication is made the condition of "knowledge" throughout, though the fact is that causality, or *causa efficiens* is far more fundamental than this and is prior to *causa materialis* in the problem of "knowledge." It insists on the presence of a correlate of phenomena because the fact of experience is this or an event, and implies this correlate. The mind may not be able to name this correlate in terms of experience, or sensation, though it does so in "phenomenal causation," which is merely coexistence and sequence, but it as inevitably thinks of this correlate or

causal agent as it thinks of a fact of experience as an effect. Hence when at a loss for a term to express this cause in conceptions of phenomenal antecedent, it resorts to the indefinite or impersonal form of subject or substance, such as "It rains" or "This is sweet." It simplifies its conception of the situation by choosing the most skeletonized form of causality conceivable, not implying any other datum of experience or sensation than the one present. As this concept does not represent a datum of experience, sensory experience at least, it is not communicable, but must be realized in the mental action of the person asked to recognize the facts. That is why aetiological causality is always transcendental. It is not a communicable datum, while anything expressible in sense terms can be transmitted, because the principle of identity can be employed to express it. We may think in intensive judgments, but we must communicate in extensive ones. True, we also think in extensive judgments, but we cannot communicate in any other, and as the philosopher, in the function of a teacher, tends always to communicate information, his habit of mind, determined by the practice of definition and ratiocination, tends to make him try to solve the problem of knowledge by the *causa materialis* without the *causa efficiens*, by ontological without aetiological causes. When he finds himself blocked or frustrated by the defects of definition and ratiocination, he imagines that there is no other principle involved in "knowledge" than that of identity. He becomes sceptical of causality and assumes that acquisition is not different from communication. But when he cannot transmit information, the whole problem has to be left to the perceptions of the recipient. If the recipient lacks in the power of perception, the "knowledge" is not transmitted. We cannot prove the *pons asinorum* to an idiot. If the recipient has the mental experience or power of using his own judgment, we may facilitate his percep-

tion of truth, but otherwise we are powerless. As already remarked, communication is but an economic device for saving the expense of time and direct experience with concrete facts. It suggests what this experience would be by indicating its identity in some particular with the existing experience of the recipient.

Now let us apply this result to the main problem of philosophy; namely, the controversy between realism and idealism. Outside of this dispute there is perhaps little to engage controversy among philosophers, but at this fundamental point they are always at odds and we seem to have made little or no progress since Plato.

Naive realism is based upon—or is usually represented as based upon—the conception of some sort of identity between experience and reality, between sensation and the external world. I say “some sort” of identity, because there are the rudiments of discussion and scepticism in the most naive realism. We generally express the situation by saying that the naive realist, who is the unsophisticated layman, assumes that he perceives things as they are, and that the idealist assumes that we do not perceive reality as it is or *per se*. The naive realist does not think of the antithesis between sensation and reality as the idealist does. To him things are as they appear. We see or perceive them. We do not create them. Cause and effect are like each other, or if that is debatable and not the correct way of stating the fact, the cause is identical in kind, more or less, with the appearance. That is, we naturally interpret reality by the principle of identity, because we have to disregard causality in communication of ideas about reality. But the moment that we discover any illusions in perception, we are perplexed. We find that the principle of identity as we are accustomed to employ it fails us, or fails to express the full meaning of things. We discover some sort of antithesis or difference between the subjective

and objective. We can no longer communicate our "knowledge." The principle of difference has come into play and as that abstracts all that was assumed to represent the real, we are left without any criterion of "reality" as previously conceived and have to fall back upon efficient or aetiological causes for an explanation of the situation or positing the real, and this is incommunicable. This principle is not convertible with the facts which it explains. When classification will not tell what a thing *is*, we are either lost or fall back upon telling what it *does*, and this is an appeal to causality to determine the nature of things, but that is not communicable.

The whole problem is seen in all its complexity in illusions. Whatever will solve them will remove the perplexities of the realist and the idealist. The philosopher is always looking for universal propositions or judgments that will be true without qualification, but illusions seem to disturb this ideal. They show variation from the normal. He wants to discover identity, whether differences exist or not, and he often finds it difficult to discover this identity where the differences are extremely marked. But the layman goes along without comparing judgments about the straight and crooked stick in the water, or those of normal vision and the image in the mirror, though he may feel as puzzled as the philosopher may be, because the layman is governed by pragmatic considerations. The layman is content with the knowledge of the cause of the abnormality, and makes no attempt to reconcile the different appearances. For practical purposes he is correct, and these in the end may lead also to the philosophical explanation. But the philosopher wants to find the unity between two apparently contradictory phenomena. He discards the question of causality in the case and tries to solve the problem of illusion by that of identity alone, and this is not the correct

standard, though it is the only means of communicating his ideas.

For instance, the illusion about the image in the mirror is not about the *existence* of the object, but about its *locus* in space. Its existence is as fully guaranteed by the image in the mirror as if no mirror were there. The illusion concerns space, not objectivity. Causality enters into the explanation and the illusion is due to the attempt to apply identity where it is not applicable. It is much the same about the crooked stick in the water. Its objectivity is protected by causality and not by sensation. The mechanical conditions affect the specific sensation, but not the application of causality. Besides, we assume that "straightness" is a percept or concept of vision alone when it is not. Permanent "straightness" is a concept produced by the abstractions of several senses or at least two of them, and this abstraction may not involve any identity between the two percepts except the fact of permanence in normal conditions, and then, between the normal and abnormal conditions, the permanence of causality for like effects. The illusion is caused by the attempt to apply the principle of identity to the phenomena that are alike in all characters except the causal situation.

It is the principle of causality, *causa efficiens*, that solves the problem. It does not require identity of any kind between subject and object, between appearance and reality, between antecedent and consequent, in order to satisfy the terms of the case, though that identity may actually be there, whether it be *numero eadem* or *arte eadem*. We too hastily assume that illusion implies non-reality in the object of consciousness, when the situation is complicated with inferences and abnormal conditions. The stimulus is there, but it does not require to be what the naive realist assumes, though he may be nearer right than the idealist. The idealist assumes a difference between cause and effect which the

realist may not do. At any rate the philosopher is influenced by naive realism long after he has given it up, because its point of view is necessary for the communication of "knowledge," though not for the possession of it. Hallucinations are the best illustration of what I mean. They are always represented as indicating an apparent reality, whose "real" existence we deny. But there are two things to be noted here. Hallucinations have stimuli just as well as normal sensations have. This is a universally recognized fact, but the stimuli are not normal ones. They are secondary, not primary, but they illustrate the law of *causa efficiens*, but not *causa materialis*, as applied by the naive realist to normal sense-perception.

In the second place, it is impossible to affirm the existence of illusions and hallucinations unless we assume a reality as the criterion of them. An illusion has no meaning apart from our "knowledge" of the truth. Lotze well expresses this in the following language. "Die psychologische Entstehungsweise eines Irrthums schliesst den Beweis, dass er ein Irrthum sei, immer erst dann ein, wenn man die Wahrheit schon kennt, von der die Bedingungen seiner Entstehung nothwendig ablenken mussten."

Hegel, I believe, it was who said that we cannot criticize the faculty of knowledge and this was synonymous with the dictum of Lotze. Error implies knowledge of the truth as a condition of discovering the error. Illusion exists only because we insist upon applying the principle of identity where it is not applicable as we conceive it. We make the conditions of communication convertible with those of acquisition, when they are only partly so. Causality holds good after identity has been disqualified. This is unmistakably true in the case of supersensible causes, even though we regard them as hypothetical and though we may later discover elements of identity in them with the sensible. The man who sets up atoms, molecules,



ions, electrons, ether, corpuscles, etc., as conditions of phenomena is not appealing to the law of identity as revealed in sense-perception for his explanations, but to some supersensible reality beyond sense, and he must either abandon his hypothesis of such things or accept the law of causality as primary and as not always convertible with that of identity as exemplified in sense-perception, which is the condition of communication, but not the only condition of "knowledge."

But the philosopher, as a teacher, is always trying to communicate "knowledge" to facilitate the student's learning, to save time in his contact with experience, and in this process he comes to regard as untenable all that will not subscribe to the law of identity. This may be true for *proof*, but not for perception or acquisition. A little reflection will show that no "knowledge" is really transmitted, but that this idea of "communication" is a euphemism for economy in the employment of observation and experiment. But we may retain the term for that conception while the actual fact is that no man can acquire knowledge except by his own activity. The communication of "knowledge" is but the pressing of our ideas into the moulds of another's experience and shortens or saves effort to acquire by personal experience and contact with the facts. In this transmission we can use only the barest outline of the facts and the individual receiver must supply the full contents himself. Only the *abstract* can be transmitted. The *concrete* must be experienced.

Now causality of the aetiological type is always transcendental; identity or *causa materialis*, ontological cause, is not. Cause is other than the fact to be explained by it, whether *numero diversa* or *arte diversa*, or independent and transcendental in time and space when phenomenal, and different or immanent when noumenal. Its ultimate conception is immanent and so coexistent with phenom-

ena, as is shown by the fact that substance is the primary criterion of it, and the ordinary representation of it in terms of antecedence and consequence, is only the evidence, the *ratio cognoscendi*, of causality, not its *ratio essendi*. You can transmit "knowledge" about causality only when it expresses itself in antecedence and sequence, and this can be done only in sensory data. Hence it functions only as the *ratio cognoscendi* of cause, not its *ratio essendi*. This is precisely the reason that true causality cannot be communicated by the facts which make it necessary. The individual must supply this "knowledge" by his own insight or ability to *see* it, or to posit it, if "see" is equivocal. This broad principle holds good of all appreciation of truth, but in matters of causality the insight cannot be transmitted or supplied when the abstraction of the facts can be transmitted, and this because the abstract can be expressed in the forms of identity. Only when the actual cause is "phenomenal" can it be communicated and then only as a phenomenon, not as a cause. The causal factor is concealed from sense and must be realized by the perceptive insight of the subject obtaining the "knowledge." The scientific man never looks for the cause in the phenomenon or event itself. He goes "outside" of this, even though he does not transcend time and space for it. The cause may be like the effect in kind, but it is other than the event. It may differ in kind, even if it does not differ in time and space. But being transcendent, causality, the aetiological type, is never an object of sense-perception. Time and space are the principles of individuation, but not of causality in its aetiological aspects. This is the reason that we cannot make causality and identity convertible, though in the final solution of our problem we may always find them associated. But being transcendent the *causa efficiens* is never an object of sense-perception; identity may be such an object and certainly is such in most instances. Hence

the communication of "knowledge" will always depend on the ability to appeal to sensory experience. Causal "knowledge," aetiological "knowledge," will not take that form and so must depend on the insight of the subject of experience.

Now if we apply the principle to the perception of reality we shall discover the illusions of many thinkers and perhaps we shall run upon the close relation between aetiological and ontological influences in "knowledge," and at the same time the difficulties between acquisition and the communication of it.

When Democritus began a theory of the perception of objects by his doctrine of *idola* he did not think of idealism as the outcome and assumed both the principle of identity as his means of explanation and the sensation of touch as the standard. He said we perceived objects by the *idola*, or simulacra of the reality seen, thrown off from the objects. He could not conceive of perception without the idea of contact and the principle of identity between cause and effect. But later thinkers substituted motion, and then luminous undulations when it was found that light was undulatory, to account for the phenomena. But here the principle of identity was abandoned and idealism began its career. Most people still assumed that touch or contact was necessary for perception of objects, whether tactual or visual, and may have squinted toward the same idea in hearing. But here the puzzle for naive realism began. Undulations were not the object and yet a necessary intermediary in perceiving it. When Berkeley came to the problem he too assumed that contact was the condition of perception as well as of sensation and also some sort of identity between sensation and the real. He could not conceive that an object could be perceived at a distance when distance or the third dimension was not in the sensation. He was consciously or unconsciously governed by the principle

of *causa materialis* in his conception and explanation of perception. Hamilton came nearer a solution, but did not live to clear up completely his analysis which he based upon the principle of identity, though he was dimly aware that it was not the fundamental criterion of reality. In any case he did not solve it. He too did not see that perception might defy the doctrine of identity and yet be valid and that causality, aetiological causality, might satisfy the problem while we waited for further investigation to adjust ontological causality to it. As long as identity is assumed to be the prior criterion of reality, it will give trouble in the problem of perception. If illusions had not occurred, the problem might never have arisen. But whatever illusion did to create perplexity, the discovery of mechanical and physical conditions affecting the perception of objectivity greatly complicated it. We have gotten away from the naive view of Democritus, but we have not wholly divested ourselves of the assumptions that governed him and subsequent thinkers. The moment that we got rid of idols to explain it, we simply set up a more perplexing intervention in the undulations of light. This perplexity, of course, arose from our failure to emphasize aetiological principles as a satisfactory solution of the problem and that perception might not require contact to determine its validity. The undulations of light were supposed to be different from the object and yet to condition the perception of it. Only idealism cut the Gordian knot here and thought of the object as subjective in its nature. That is, it was sensation which we perceived and not the object *per se*, if there was an object *per se*. It still clung to the assumption that to be seen must be contact with the sensorium. That is, in Berkeleyan parlance, *esse is percipi*, whatever that may mean. But the illusion came from supposing that sensation and perception were the same thing. They are simultaneous, but are functionally different, and this cannot be

made clear by the law of identity. But if we once see that contact may not be necessary for perception, we shall not be so much influenced by the law of *causa materialis* in our explanation of perception.

The idealistic theory depends on two assumptions. (1) That contact and therefore some kind of identity between sensation and object is necessary for perception. (2) That undulations are the cause of the sensation and are themselves different from the object and the sensation. In the first place the undulatory theory is hypothetical and with it the difference assumed between "physical light" and "psychological light." The corpuscular theory may modify this. But we have to proceed with the undulatory hypothesis. The idealistic theory assumes that the sensation can be called light because there must be some identity between the sensation and the thing "known." This enables it to eliminate the object as non-existent or as "unknown." The assumed difference between the undulations of light and the assumed object of naive realism helps it in this view. But it never satisfies us with its assumption that we can "know" these undulations and yet that we cannot "know" the object. The whole problem of perception and "knowledge" is involved in the doctrine of undulations quite as much as in that of external reality or matter. If you cannot trust perception in the one, you cannot in the other. The fact is that, viewed from the analogies of touch, vision gives no sensation at all. The very existence of visual sensation is an inference, when adjudged by the principle of contact. It is the object we "know" or perceive, and neither the sensation nor the undulations of light. The only common element between touch and vision as sensations is the reaction against stimulus and that relation is no part of the "sensation" as such. The object is no part of the sensation and the perception of the object is not dependent upon any identity between what is in the sensa-

tion and what is in the object, though some identity may be found by further analysis of the problem. Let us see if this can be done.

I have said that the puzzle for most people lies in the fact that we are supposed to perceive objects in spite of the fact that the immediate stimulus is either no part of the sensation or has no resemblance to either the sensation or the object, the mental state or the cause. Let us see, however, just what the facts of nature are.

In ordinary photography we have undulations, according to the hypothesis, assumed to be wholly different from the object from which they emanate, passing to the plate of the camera and forming or producing an image there. The result is to produce an image so exactly similar to the object in certain essential characteristics as to be perfectly recognizable in comparison with the reality. A man can be recognized from his picture, though he had never been seen before. The undulations are not like the object and are not like the image, and yet the image is like the object. This is more true in color photography where the actual colors of the object are transferred to the image on the plate. On a larger scale the law of color adaptation in nature illustrates the same law. The cause transfers its characteristics to the animal it affects. Cause and effect have certain identical characteristics in all these phenomena.

Now if nature establishes a law of similarity between subject and object, between cause and effect, between object and image by which we perceive the object, may not perception bridge the chasm as easily as nature does that between object and image in the camera? Why may not nature provide a means of adjusting perception to the situation as well as the identity between object and image in spite of a causal intermediary unlike both of them? Why should I interpret perception after mechanical analogies?

If I trust perception or hypothesis in asserting the nature of undulations, why may I not trust it when it affirms reality in spite of the real or apparent antithesis between sensation and the object, or the difference between undulations and both of them?

That is to say that perception does not depend on identity between object and sensation and may be correct when they are antithetic to each other. The identity may be there, but it is not the identity that determines the perception and its validity. Its judgment about the nature of reality or the object may easily be as valid as that about the undulations and their relation to both object and image. In this, too, we may find a way to recognize a place for *causa materialis* in the problem of perception, though not allowing it to take the place of *causa efficiens*. It is manifest in the phenomena of photography and color adaptation, so that the analogy of these with the phenomena of visual perception may suggest conceptions that will help to solve the problem at this point and to resolve the illusions that center about the acquisition and communication of "knowledge," on the one hand, and about logical and descriptive definitions, on the other. We try too hard to communicate "knowledge" instead of making the recipient do his own thinking by coming into direct contact with facts. We abstract from conditions under which abnormal phenomena occur and then seek a unity where there is none and where we need none. In other words, we substitute ratiocination for perception and assume too readily that "knowledge" can be transmitted without the employment of the functions of acquisition. The latter require the individual to do his own work while communication can only instigate, not produce. Perception is an individual function, ratiocination a social one. Scepticism and criticism, important as they are, may easily develop into intellectual paralysis. The individual must exercise his own power of insight.



His perplexities in the face of illusions may be respected, but contact with facts will dispel them. They are largely of his own creation, as were the paradoxes of Zeno and the puzzles of the Sophists and the New Academy. A little more than superficial analysis and criticism will find the way out of the labyrinth. It was the hopeless entanglement of formal logic, important in its place, that led Professor James into pragmatism. He, like Herbert Spencer, found the solution in contact with facts, or the priority of science. It was Spencer's absurd juggling with the Unknowable that fascinated logic choppers who never discovered the illusions and equivocations that perplexed the case while his knowable was a perpetual source of charm and interest. It is the concrete, and not the abstract that solves problems. If philosophy, then, can do its thinking in the processes of acquisition and confine its critical methods to the communication of "knowledge" it may hope to escape the "ego-centric predicament," reduce abstractions to their place, and find that it can have as much confidence in perception as in ratiocination.

JAMES H. HYSLOP.

NEW YORK.

## THE SCHOOL OF TO-MORROW.

WE are taught by social and by organic evolution alike that the development both of species and of societies does not always take place at the same rate, but is effected rather by an alternation of periods of stagnation or semi-stagnation during which the evolutive process is very slowly unfolded, with other periods in which the rhythm receives almost unprecedented acceleration. This occurs when the gradual accomplishment of events brings about such a contrast between the being which is evolved and the environment in which it has to live that a new and very rapid adaptation is necessary if an inevitable catastrophe is to be avoided. The nations of Europe, and particularly those of the *Entente*, are passing through such an experience, for, even if they emerge completely victorious from the armed conflict with Germany, they none the less run the danger of collapse in the world-wide economic struggle in the after-war period. if they are not re-organized so as to adapt themselves to that profound and radical change in the environment which has been gradually taking place, and which has arisen from the existence of such a competitor as the German Empire, dominated by its ideal of a hegemony, and in possession of all the psychical, economical and technical elements that are necessary for the accomplishment of its aims.

Renovation, in the case of a nation, does not so much imply a change in the aspect of its external institutions,

as a moral and intellectual re-modeling upon new lines of all those members upon which depend its institutions, its economic life, and its social progress.

This has been instinctively realized by all the nations of the *Entente*, and they have set to work, anxiously, if one may say so,—as if they felt their very existence threatened—to examine their educational systems, and to study those introduced by Germany, in order to discover where their own are defective, and where those of their rival are worthy of imitation.

This examination has merely confirmed the suspicion that no mysterious secret, no wonderful pedagogic discovery is to be found in the German systems, with perhaps a single exception, that they succeed better than ours in providing the community at large (and not a small minority belonging to the higher classes, but the mass of the people) with that valuable body of concrete knowledge, that elasticity of adaptation to the environment, that capacity for transforming the latter into a shape appropriate to its own ends, which in the struggle for existence have always been considered the very certainty of success.

Let us then examine in the first place whether our own systems are the best suited to effect that continual contact with the greatest possible number of different objects or facts in the external world, and to develop the spirit of observation which alone can furnish the child with that vast aggregate of knowledge of its environment which constitutes the basis indispensable both to its adaptation to that environment, and to its ability to effect a further transformation of it in accordance with needs.

For that purpose we have from the earliest awakening of the child a valuable auxiliary in its innate curiosity. The observation of everything that comes before its eyes should not give rise to fatigue, especially if it is made a matter of play by the wise use of its toys. The Germans

in their toys have done wonders in the faithful reproduction in miniature of all that can be reproduced of the external world. They have been no less successful in dealing with the side of that world spontaneously presented to us by nature, and with the technical side gradually brought into being by the industry of man. In every other country this magnificent opportunity has been neglected. We have, indeed, often allowed our toys to give us a false idea of reality. For instance, the little tin engines which delight our children are set going by the winding up of a spring. But the German locomotive has its little boiler, and its little spirit-lamp, and thus the child itself makes the steam, and it is the steam which moves the piston in toy and real machine alike. Thus the child, by that spontaneous curiosity which leads it to endeavor to understand the working of the little mechanism, acquires without an effort something of that mental habit, that instinct of the engineer, which will later stand him in good stead when he enters the technical school or the polytechnic, into which too many of our children are pitchforked without ever having been near a machine. I am not referring to all those wonderful toys which, because they are so cheap, are more and more within the reach not only of the wealthy but of all classes of the community: railway stations, factories, stables, farms, etc., completely fitted up and suitable for giving an exact idea of the agricultural and industrial environment in which the man of the future at a later period will have to exercise his activity, whatever his condition in life may be; kitchens and rooms, all complete and presenting to the child every object required in a well-managed household; Noah's Arks, with faithful reproductions of the various types of animals; miniature botanical gardens with their trees and plants; and so on. Unfortunately we are still very far from this ideal in which the toy is a faithful reproduction in miniature of the external environment, both

natural and technical,—the ideal by which the environment which the child will be called upon some day to dominate and to transform is made part and parcel of its mental furniture.

Our infant and elementary schools are not successful in this exercise of the spirit of observation, and in the bringing of the mind into contact with reality. With those rare exceptions in which the Montessori system has been applied with success, these schools seem to place every imaginable stumbling-block in the way of furnishing the child with the slightest experience of the world and of life. The school itself is too often a bare and empty room, containing nothing but forms and desks. It should be first and foremost a rich and varied museum. The teaching, instead of consisting of lessons on things, is purely verbal. Reading and writing, instead of being taught as a means of acquiring the experience of others, and of communicating to others our own experiences, becomes an end in itself. At far too early a period grammar is made to exercise a wicked strain on the infant intelligence, and checks at its very birth the vital impulse of the child mind—a mind that is eager to know everything. As far as life is concerned, the essential utility of the memory consists in the power it gives of storing up in the mind the recollection of the experiences we have lived through, or the experiences of our fellows. Thus the memory of the child should be exercised by encouraging him to recall and to relate to accurate terms what he has seen and noticed during the past few days. Instead of this, he is wearied out by oral repetition of passages of insipid poetry, exercises in mechanical recitation, which are all the more irksome to the pupil because, wiser than his master, he sees no object in them. And to crown all, there are the essays, in which the poor child has to make bricks without straw. Surely the mere written description, *carefully drawn up in consecutive*

*order*, of concrete objects which have interested him, or may have been placed before him with the purpose of interesting him, would have the twofold effect of exercising his powers of observation, and of training him in that *clear, accurate and systematic* expression which is all that should be expected in compositions from children in either elementary or secondary schools.

Drawing from nature and geometrical drawing are either completely neglected or are taught by old and defective methods, in spite of the fact that again and again it has been insisted that they are useful, in the one case as giving a knowledge of the fundamental geometrical properties of objects, and in the other as cultivating the power of observation. The same may be said of manual work, which has rightly been claimed as invaluable in developing the faculty of observation, in bringing to light the fundamental physical properties of matter, and in giving to man that sense of power over matter and the forces of nature which raises him morally and strengthens his will and energy in action.

In all cases the mere knowledge of facts, the mere experience that comes from ourselves or our fellows, is not in itself enough to produce an adaptation to the environment, or, to put it better, to give us the power of adapting the environment to ourselves, our needs and our ends. What really makes us masters of nature is *reason*, because it is only by means of reason that we are able to determine what results will follow this act or that; reason points out to us the path by which the desired result will be achieved; in a word, it is reason that gives us the power to foresee and serves as a guide to all our actions. Now in our schools, and especially in our secondary schools where this faculty should be more particularly cultivated, an infinite number of opportunities of developing it are neglected, and in certain cases one might even assert that the object of

instruction seems rather to destroy than to develop the precious faculty that Mother Nature, wiser than the school, has given us.

It is true that mathematics are excellent as a gymnastic for this faculty of reasoning, but mathematics are not enough. This subject degenerates, especially after the intuitional period of instruction has passed, into a purely mechanical exercise, especially for those pupils who have no genuine aptitude for the subject. Take for example the case of the schoolboy who in his final examination did all his calculations correctly, but was at a loss to explain the tiresome  $\pi$  which came into nearly every formula he used! In any case, as mathematics are usually taught, they develop but one side of the reasoning faculty, the deductive, while they tend rather to dry up the synthetic or intuitive side, by means of which we are able to see analogies between certain phenomena which at the first glance may seem to be quite dissimilar, and thereby to extend to quite a new category of phenomena what we already know from another category which is more familiar to us. Besides, mathematics, either because they are too mechanical, or because of the over-development they produce on the deductive side, tend rather to atrophy what Pascal called *l'esprit de finesse*, which is so necessary to men of business and to men of action in general, and which, thanks to the synthetic view it gives us of a complicated aggregate of circumstances, consists in the faculty of forming for oneself an accurate idea of the relative importance of the different factors or phenomena which combine to produce a whole. Charles Darwin, who himself confessed his aversion from mathematics, shows us nevertheless in his masterly works that he possesses this synthetic faculty, and that in vigor of thought he is inferior to none of the most eminent mathematicians.

The natural sciences could lend themselves wonderfully



to the development of this reasoning faculty, and to its development on the deductive or analytical side as well as on the intuitive or synthetic side. But we know only too well how, with the rarest exceptions, they are taught in most schools. In the first place the greatest care seems to be taken to keep out of sight of the student the objects with which he should be closely familiar. Instead of the objects themselves, he is given long and minute verbal descriptions which cannot give him the least idea of what the objects are. He is compelled to learn by heart that a stork has a long bill and long legs, although he has never seen even a stuffed specimen of that fowl. Time is wasted over classifications and sub-classifications, and woe to the unfortunate examinee who cannot repeat like a parrot the species and the genus of birds to which the stork belongs! This is no exercise for the reasoning powers or for the spirit of observation. And yet, the doctrine of evolution, set forth as the nucleus of all the natural sciences, accompanied by concrete presentation, or by very clear images of the different species and of their environment, would explain the genesis of the most fundamental peculiarities of the structure of animal and vegetable organisms, and would thus keep the reasoning faculty constantly at work. Instead of allowing the instinctive mental inertia of the child full play while he is receiving and storing up in his memory the master's verbal statements as to the morphological characteristics of the different species, the pupil should be steadily induced to find out for himself the why and the wherefore of certain characteristics presented by certain organisms compelled to live and move in a stated environment. He would thus acquire a synthetic vision combined with an intimate knowledge of the organic world about him, and at the same time he would find in his hand the precious thread of Ariadne which will in the future guide him in all the

transformations which he may find it useful or necessary to effect in his zoological or botanical environment.

The branch of the natural sciences which comprises notions of the structure, the functioning, and the physiological and physical hygiene of our organism must in future have a much more important place in our system than it holds at present. Of themselves these ideas would constitute a solid basis for individual positive morality, and from the social point of view would eventually secure to the nation the maximum return from its potential energies, and would in particular prevent the early decadence or premature destruction of those energies.

Geography based on the naming of capes and bays, of latitudes and longitudes, also fails in its object, which should be that of giving to man a knowledge of the physical, economical, and social environment in which it is his lot to live. Nor does it assist the development of the reasoning faculty either on the deductive or on the intuitive side. And yet no other subject can equip the future *homo oeconomicus*, the worker in the fields or in the factories, the clerk or the emigrant, with information more indispensable to the different activities which some day he may be called upon to exercise. Nor is there any other subject of study which can more effectively induce him to compare the civilizations and institutions of other lands with those of his own country, and so give him in his political duties as citizen both inspiration and impulse to the reform and betterment of the social environment of which he forms a part. And finally there is no other science which lends itself more to the development of his reasoning powers. But if this is to be secured the teaching must not be purely informative in character. As Irving Elgard Miller, the well-known American teacher and psychologist, maintains, we must proceed by continual questions, e. g.: Why is the climate of England warmer than that of Labrador? Why

are the countries to the east of the Rocky Mountains arid? Why have the United States spent so much money and energy in cutting through the Isthmus of Panama? What are the conditions which have made New York, Chicago, and St. Louis such important towns?, and so on.

The same may be said of history based on dates, names of kings and battles, and isolated events, all of which teach us nothing of the present moment in history, which alone is of interest to us in completing our knowledge of the environment in which we live. From any one single historical fact of the past, pure and simple, we can draw no conclusion that will throw light on the facts of the present. It has been said that man, with reference to his historical environment, is like a traveler who has lost his way in the forest, and who, while he can see the individual trees, is nevertheless incapable of forming such a general and synthetic view of the forest itself, as alone will enable him to find out unaided the direction he must take. Now history, if taught so as to illustrate in its general lines, and at the same time in its deeply-rooted causes, the complicated development of historical facts, and thereby making possible a comparison of general historical situations in the past with those of a similar generality in the present, would then really fulfil the highly important task of facilitating the adequate and complex comprehension of *our* historical environment which, I again assert, is the only one which concerns us. At the same time such teaching would lead to a better comprehension of the resisting power of certain traditions and the prestige of certain institutions, even after the object of their existence has passed away, and the direction of certain evolutive tendencies, which in their aggregate are so many important factors in the complex play of the social forces which make history. And finally, such teaching no less than the teaching of geography, would lead to the continual exercise of practical reasoning,

and would develop the political sense of the future citizen. Questions and problems such as the following would suffice from this point of view: Why did Richelieu in these circumstances or those act in this way or that? In consequence of what conflict between parties or interests did this or that legislative or constituent assembly arrive at this or that decision? What complex historical situation made Napoleon's *coup-d'état* successful?, and so on.

To geography and history must be added with even wider developments the teaching of economic, juridical and administrative science. Not only will this give information that is essential as to the environment in which man must work, earn his livelihood, assert his rights and develop his activity as a citizen, but it will also, by the very questions that are raised and by his efforts at their solution, lead the student to reflect, and will form in him the habit of that accurate evaluation and appreciation of things which is so important a factor of success in life. The mere setting forth of these subjects, and of law in particular, by showing the student the conditions that are necessary for the maintenance and progress of society, would at the same time be a training in what we may call social hygiene, and therefore in that positive social morality which would be the natural complement of the positive individual morality already based on the hygiene of the organism.

But the development of the reasoning faculty in its two-fold aspect of the analytical and the synthetic is not sufficient. The student must in the first place be supplied with the direct and tangible proof of the great domination over matter and the forces of nature which is furnished by the concrete knowledge of external facts, and by reasoning based on them; and he must further be trained in the unceasing application of that concrete knowledge and in the use of his reasoning faculty in such a way as to become accustomed to making them the infallible guide and cri-

terion of all his actions. This lofty function of education is fulfilled by nothing more effectively than by the teaching of chemistry and physics, throughout accompanied by that work in the laboratory which should be possible in every secondary school. By its direct action on matter and the forces of nature, by the constant overcoming of the difficulties which beset the path of all experiment, and which are overcome by reflection alone, by investigation under the impulse of the eagerness to discover why this or that experimental result is not what was expected—by all these means will the adolescent find that his powers of observation and his reasoning faculty are being refined. At the same time the will and the resolution to attain the desired end will be strengthened, and the result will be to realize in one and the same individual the happy union of the man of action and the man of thought.

If the subjects we have mentioned aim at the intellectual cognitive development properly so called, the teaching of literature must not only develop and enrich the creative fancy of the student, an inestimable possession in all the really new contingencies of life, but it must also have a highly educative end, the endowment of the youthful mind with lofty moral sentiments, sentiments which are as necessary for the well-being as for the progress of the community.

If the objects to be attained by the teaching of literature are those I have indicated, here then is the unquestionable opportunity of banishing the dead languages from our secondary schools, except of course in the case of students who are destined for literature and for the law.

The old question of the utility of the dead languages is not an absolute but a relative question. The question is: Shall they usurp the place of other and more useful subjects? In this form it admits of but one answer. It is idle to assert that Latin and Greek afford an incomparable in-

tellectual gymnastic, for the modern languages and the subjects already dealt with are even better fitted to achieve that end. Nor can it be claimed that the dead languages furnish the young with ideas which are useful in modern life. On the contrary, it has with as much reason been asserted that the study of the classics unfits men for practical life, and detaches them from the prosaic occupations to which they must some day devote themselves. Nor can it fairly be said, since they speak to us from a distant past, that they can inspire us with sentiments in harmony with the tendencies and aspirations of modern times. And finally, a knowledge of the classics can no longer be claimed as the sole means of knowing the masterpieces of antiquity, for as every one knows, most schoolboys never acquire such a knowledge of Latin and Greek as will enable them to taste the beauties of those masterpieces; and if they know them at all, it is by the means of good translations.

If Latin is absolutely essential to the future students of law, and if Latin and Greek are essential, as they undoubtedly are, to the future students of literature (we do not agree that they are necessary to the students of medicine and the natural sciences, in spite of the few Latin and Greek roots in their technical terminology)—they can always be taught in a special section. They must be taken in extra hours, without encroaching on the time required for the other subjects (and if this supplementary work were to prevent a few young folk from taking up the legal profession, there are few who will question the advantage to society). Or again, the time allotted to the practical work of the laboratory may be omitted by the future students of literature and the law, and given to instruction in the classics.

As for instruction in literature, properly so called, i. e., the knowledge and study of the principal literary masterpieces, ancient and modern, of each country in turn, in the

original text or in good translations—its principal object, I repeat, should be the development of the creative faculty of the fancy, bold and unfettered, without which even the most powerful intellect is but a machine, and at the same time to give every young student an ethical preparation for the exigencies of civic life and social progress, to inspire him with lofty civic sentiments and to make him an upright, noble and generous soul. It is precisely with this object in view that we can and should count on the profoundly emotional and irresistibly suggestive influence that no really classic work in literature ever fails to exercise. Thus the time devoted to literature would be for the pupil a period of rest and gracious respite from the continual strain of the powers of observation and reflection he would be compelled to exercise in the other subjects of a scientific character. Literature, and if required, the history of art, would thus really transport the young mind into an atmosphere full of life, full of fancy, of free inspiration, of noble and lofty sentiments; and his impulse toward the pure skies of the ideal would be spontaneous and vigorous in proportion to the mental constraint of the hours devoted to the other subjects.

As for the teaching of philosophy, the present course must be recast completely and with the utmost care. I would go so far as to say with the most anxious care, for, unfortunately, philosophy as it is taught in our schools, with an insidious metaphysics for its basis, a metaphysics more dangerous than if it were openly declared, seems to have the Mephistophelian function of disturbing and obscuring that lucidity of ideas, that reasoning based on sound sense, that upright and healthy judgment which are innate in the normal man. Teaching of the subject could be given, on a reduced scale, in the literature hours, as the history of philosophy, and then only if it is considered good for the development of the fancy of the student to know



something of those nebulous poems in which the great metaphysical constructions of the past consist. As a discipline in itself, the course should be transformed, partly into one of scientific synthesis, and partly into one of the analysis of the human mind and the history of science, so that the student may acquire that wide and general view which makes him conscious of the illimitable power of which the human intellect is capable, provided that it continues to exercise his activity in the direction imposed upon it by its very nature.

But, the benevolent reader will say, all this has been discussed over and over again. That is perfectly true. But many of these questions must be opened up anew, and not only these, but also those of professional training and of higher education upon which I have not here touched. They are questions which must be re-examined with a fresh mind, and in the light of the harvest of facts revealed to us by the great war. Questions once regarded as of merely academic interest, have now become problems of vital importance. Action is necessary on the part of those who realize the terrible dilemma by which we are faced: There must be reform, or we perish. Safety lies alone in continuous, unwearying effort; no detail in the teaching of to-day must be neglected, no fact in the life of the school must escape examination. Every question in connection with the training of the new generations must be re-opened and thoroughly discussed. The real aims of education must be subjected to the closest scrutiny; the courses of the schools must be overhauled from top to bottom. Every change and improvement must be enforced with implacable tenacity and with every ounce of our energy. Not for one moment must we allow ourselves to be checked in the work of reformation by the inertia of institutions that are now out of date, or by the culpable indolence of legislators or bureaucrats.

Only thus shall we achieve our supreme aim: the equipment of the democracies for the bitter life and death struggle, for the task of opening up the road to the complete attainment of their glorious destiny.

EUGENIO RIGNANO (Editor of *Scientia*).  
MILAN, ITALY.

## THE CONCEPTIONS OF THE HISTORY OF PHILOSOPHY.<sup>1</sup>

IT is less easy than one would think to form an exact idea of the history of philosophy, of its function in the order of human disciplines, and the way in which it must endeavor to carry out this function effectively. Like all history, naturally, its task is to find out and reconstitute, and as far as possible to explain, realities which have previously come to pass; but how far does the nature of these realities agree with the labor of reconstruction, and in any case is it not of such a nature as to require special methods or special mental attitudes for accomplishing the task? It is not enough to say or to presume that the methods of investigation proper to history have simply to be applied in the present case; for limits must be assigned to the particular object to which these methods are applied, and the meaning of the questions we must ask ourselves in order to understand it should be determined: now it is from the nature of the object that the enunciation of these questions, to a considerable extent at all events, is evidently deduced. Consequently, we must inquire as to the precise way in which philosophy lends itself to historical study.

At the outset, we must note that philosophy is not a thing that exists objectively, at least in an objective mate-

<sup>1</sup> The following article is a lecture given by the late Victor Delbos and is entitled "Les conceptions de l'histoire de la philosophie." It is printed in the *Revue de métaphysique et de morale* for March, 1917 (Vol. XXIV, pp. 135-147), and the translation is by Fred Rothwell.

rial existence conformable with the unity and simplicity of the word. *Philosophy* does not exist, but *philosophies* do, philosophical doctrines or conceptions which have appeared either successively or simultaneously, and many of which, strange to say, have claimed to be the vehicles of complete and certain truth, to supply the formulas which conclude investigation, and hence, in a way, as regards knowledge of their object, to arrest the course of history. These philosophies are diverse and frequently opposed to one another, not only in the solutions they reach but also in the problems from which they originate and still more in the faculties they bring into play and the methods they employ, and even in the representation of their ideal, which is strictly systematic in some and in the others more divided and parceled out, less engaged in the quest for unity: so that we have actually some difficulty in indicating those characteristics whereby philosophic doctrines or conceptions are really distinguished from other forms of intellectual production.

Nevertheless, an attempt must be made to indicate these characteristics. Without either prejudging or excluding anything, we may lay it down that the various philosophic doctrines or conceptions have come about, in part or in whole, *with reference to* this end: from the resources of the human mind alone to supply an all-embracing explanation of reality and also such an idea of the destiny of man as will enable us to determine his essential task in this world. I state that the various philosophies have appeared *with reference to* this end, by which term I mean that while some of them have had this end directly in view and believed they could actually realize it more or less completely, others have wished to examine and dispute this very claim, in such a way at times as to consider it more or less illegitimate, more or less capable of realization. Some philosophies are doctrinal and dogmatic, others are critical and

sceptical; others again combine or link together these two tendencies in varying proportions. From another point of view, the importance allotted to any particular part of the philosophic problem varies according to the philosophers. All the same, speaking generally, all philosophy is qualified by its relation, whether total or partial, affirmative or critical, or even consciously negative, to the end we have just set forth.

Hence, while we can set approximate limits to the object of the history of philosophy, it would all the same appear that this object scarcely lends itself to historical research without being misrepresented. Indeed, is it not characteristic of many philosophic doctrines that they claim completely to reconstruct all previous work and hence to suppress their dependence on the past? To some extent, history imposes on them like dependence. Is it not also the characteristic of many of them that they claim to express the whole truth, i. e., an adequation of mind and matter, freed from the conditions of time? Now, history subordinates them, however slightly, to conditions of this kind. Cartesianism offers us a striking and decisive instance of the conflict between the historical and the philosophic mind. Descartes, when he philosophizes, does not want to know if men existed before him or not; moreover, he asserts the truth he discovers through the content and the concatenation of clear, distinct ideas, the meaning and scope of which are eternal and immutable. The philosopher contemplates or explains things *sub specie aeternitatis*. The historian can only consider them under the form of time. Malebranche, like a good Cartesian, is ever telling us that the knowledge of the philosophic opinions of other men is quite useless and may be extremely prejudicial to the search after truth. It cannot be denied, on the other hand, that the history of philosophy has frequently set forth the contrast between systems and the per-

petual and useless going over the same ground again and again on the part of philosophers themselves. Still, we must discover if such a view has not been added on to history, both by the prejudices of a sceptical mind which likes to find an irremediable contradiction everywhere, and by the excesses of the dogmatic mind which, presupposing that philosophic truth is absolutely realized somewhere in a given system, delights in proving the impotence or the obscurity of everything outside this system. To do this, however, we must endeavor to form a clear idea of the history of philosophy, for this idea is itself of varying nature and does not readily reveal itself in its exact form. Let us examine a few modern works which, directly or indirectly, have either contributed to this revelation or have claimed to do so.

Strictly speaking, it is impossible to count among the works dealing with the history of philosophy such a work as Bayle's *Dictionnaire historique et critique* (Rotterdam, 1695-1697, 2 vols). Many of his articles, however, which treat of doctrines of the past, bear witness to far-reaching sources of information that is less well arranged than curious in its nature. Moreover, the restoration or the evocation of these doctrines is calculated to confound human reason and that along the lines of scepticism. Here we are rather dealing with a philosophical criticism of the doctrines handed down to us than with a historical criticism of the methods in which their transmission has come about. Directed along these lines, Bayle's intelligence does not always penetrate to the real essence of a system, far from it. None the less has this exposition of various doctrines resulted in a certain notion of them being spread abroad and popularized, while a stimulus has been given to the spirit of research in the domain of the history of philosophy.

Before assuming a form capable of combining the philosophical interest of the object with the historical require-

ments of research, the history of philosophy has again in modern times acquired characteristics which have kept it more or less aloof from the one or the other of these two conditions. *The History of Philosophy*, by Thomas Stanley, published in London in 1655, 2d ed. 1687,—translated into Latin, Leipsic, 1711,—is no more than a pragmatic and narrative history; it follows to a considerable extent the same lines as the work of Diogenes Laërtius; moreover, it is concerned only with the philosophy previous to Christianity, on the ground that, "Christian theology being the receptacle of truth, there is no longer any reason why philosophy should seek it."—Brucker's works certainly indicate an advance on this method of procedure; his principal work, *Historia critica philosophiae, a mundo incunabulis ad nostram usque aetatem deducta*, 5 vols. (Leipsic, 1742-1744), is not only very erudite and unambiguous, it is also largely critical. The doctrines are stated faithfully, though the idea of their concatenation and their relative importance is lacking. Convinced that truth has its home in Protestant orthodoxy and in the philosophy of Leibniz, Brucker judges doctrines by this standard, and occasionally almost misjudges the causes that have produced discordant systems—causes that have a deeper origin than human perversity. Truth being single, error is multiple,—and the history of philosophy, by disclosing the multiplicity of systems, shows *infinita falsae philosophiae exempla*.—Brucker confuses the history of philosophy in its origin with that of religions, mythologies and poetry. Here, no doubt, he was right in thinking that the origins of philosophic thought raised the problem of its relation to those forms of belief which involved ideas on the world; but in those days he had no means of stating clearly and attacking effectively—let alone solving—this kind of problem. At all events, even his formal statement of purely philosophical doctrines still



resembles too closely the pragmatic statement of Diogenes Laërtius.

There is more coherence and organization in Tiedemann's work: *Geist der speculativen Philosophie* (7 vols., Marburg, 1791-1797). This is an exposé of the doctrines of theoretic philosophy from Thales down to Berkeley, an exposé which aims at stricter impartiality, and frequently, if not always, succeeds in entering profoundly into the meaning of the doctrines. Tiedemann possesses a relatively objective criterion for the examination of systems. He believes that it would be arbitrary to gauge their importance by the truth of any particular one regarded as absolutely certain; above all, he would try to find out if a philosopher has contributed something new, if he bases his affirmations on solid reasons, if he is able to connect his thoughts mentally and ensure their mutual agreement, and what difficulties could be brought up against him. Tiedemann is one of the opponents of the new philosophy, at that time the Kantian; for his part, he holds to conceptions which combine the philosophy of Leibniz and Wolff with that of Locke.

It is not surprising however that the appearance and the predominance of the Kantian philosophy tended to make Kantism a guide alike in the exposition and the examination of the doctrines,—especially since Kantism claims to solve by critical idealism the conflicts of reason, the manifest origin of the conflicts between systems. This tendency we find in Buhle, a Kantian along the lines of Jacobi,—though he is somewhat cautious and not too manifestly prejudiced in favor of historic truth. His *Lehrbuch der Geschichte der Philosophie und einer kritischen Litteratur derselben* (8 vols., Göttingen, 1796-1804); and his *Geschichte der neueren Philosophie* (6 vols., Göttingen, 1800-1805), are mainly valuable by reason of the bibliographies

they contain. The *Geschichte der neueren Philosophie* also contains important extracts from rare works.

Faith in the truth of Kantism is more pronounced in the work of Tennemann.

In the years 1798 to 1819 Wilhelm Gottlieb Tennemann published his great history of philosophy: *Geschichte der Philosophie*, in eleven volumes; it was meant to be completed in thirteen volumes. This work has certain good points: a careful and occasionally critical investigation into origins, great clarity of exposition, considerable wealth of information and numerous references. Its defect is that it judges doctrines too much in their relation to Kantism; all the same, its conception of the evolution of philosophic doctrines is one that removes from them the contingent character of being successive and disconnected opinions. Its object is to set forth the efforts of reason to realize the idea of the science of the ultimate laws and principles of nature and liberty. This conception of a progressive development of reason in its strivings toward science was also held by Kant, and, in passing, it is curious to note that Kant had the idea of a rational history of philosophy; one that differed from empiric history in the fact that, instead of noting the succession of the doctrines purely and simply, it must explain their sequence by the progressive evolution of reason itself.—This quasi-Hegelian conception of the history of philosophy was not developed by Kant in his works: traces of it are found among his notes (Reicke, *Lose Blätter*, II, p. 277 etc.; 285 etc.) The main points of Tennemann's great work are included in his manual: *Grundriss der Geschichte der Philosophie für den akademischen Unterricht* (1st edition, Leipsic, 1812, 5th edition, Leipsic, 1829). This manual, of which Cousin published a French translation (2d edition, 1839) supplies important bibliographical information.

Though in Germany the authority gained by the phi-

losophy of Leibniz and Wolff, and later on by that of Kant, might render somewhat partial the study of the doctrines of the past, still, the speculative character of these two philosophies predisposed one to feelings of sympathy for the various historical manifestations of philosophic thought;—whereas in France, the mind, less inclined to speculation, evoked the doctrines of a more or less distant past only to bring out their inadequacy or vanity. In France, the spirit of the eighteenth century is a struggle against the philosophic structures of the preceding century, against Cartesianism and its offshoots. The historical element of philosophy in the works of that time affects a polemical character. In his *Traité des systèmes* Condillac deals thus with Malebranche, Spinoza and Leibniz, though he does it mainly to prove that their systems, based on abstract principles, set forth as certain, propositions that are arbitrary, vague and unintelligible—a testimony to the error which consists in thinking that abstract formulas are capable of affording determinate knowledge.—Nevertheless, it is to Degérando, a writer belonging to the ideological school, that the merit of attempting a general history of philosophy in the beginning of the nineteenth century is due, though Degérando had been influenced in this direction less by the tendencies of the school to which he belonged than by an acquaintance with the German works of this class which he had acquired.

The comparative history of the systems of philosophy, first published in three volumes by Degérando (1804), re-edited in four volumes in 1822-1823, and translated into German by Tennemann (1806-1807), attempted to add to the historical exposition of the systems a critical analysis of the cause from which these systems are derived. This historical exposition sets forth, as a center for all historical ventures, the problem of the universal principles of all knowledge, interpreted largely after the ideologists; critical

analysis adopts as its final object, by comparing the essential data of systems with their consequences, an inquiry into the system which is the best in itself. This system, regarded by Degérando as the philosophy of experience,—experience that is complete, both interior and exterior, and interpreted by the mind which only refuses to supply *a priori* knowledge, of itself,—in turn enables us to recognize the relative truth of other systems: prior to Cousin, Degérando would indeed appear to have admitted the necessity and importance of eclecticism.—Nevertheless, insight and vigor are too frequently wanting in this history, which deliberately gives the doctrines a certain meaning; the very concatenation of the doctrines is here but partially grasped.

By reintroducing as a law of the mind an idea which Wolffianism had rather unfortunately neglected in Leibniz, the idea of development, of *Entwicklung*, post-Kantian German speculation supplied a concept capable of giving a meaning to the sequence of systems. Schleiermacher is one of those who approached the history of philosophy under the influence of this concept, more or less strictly applied; but we are mainly indebted to Schleiermacher not only for a profound sense of that which, in the history of ideas, links past to present and gives it a renewal of life, but also for original and suggestive views on ancient philosophy, principally set forth in various articles and in the commentaries that accompany his translation of Plato. Schleiermacher greatly influenced H. Ritter, the author of a history of philosophy, *Geschichte der Philosophie*, in twelve volumes, ranging from the most ancient times to the period of Kant (1829-1853). Ritter looks upon philosophy as a whole which continues to develop; he refuses, however, to consider preceding doctrines as moments of the doctrine which replaces them in time; he expressly opposes all methods of dealing with the history of philosophy by *a priori* construction; hence he would withdraw

from the influence of the man who, and the doctrine which, in spite of the criticisms which may be launched against them, have contributed most to attract men to the history of philosophy and to enable them to see how interesting it is: Hegel and the Hegelian doctrine.

To Hegel undoubtedly is due the credit for introducing a conception of the history of philosophy which, while subject to reserve and criticism (for the spirit in which the history of philosophy becomes with him a philosophy of history, and, more than that, a philosophy of becoming—a philosophy set up once for all as an absolute and itself setting up becoming as an absolute—might easily corrupt or do away with the historical sense itself), has at least claimed to show forth the compatibility or even the profound agreement of philosophy with its history and has reconciled the historic with the philosophic spirit. In a general way, it is known that Hegel regarded philosophy as the science of the absolute in the form of a dialectic development of thought proceeding by way of thesis, antithesis and synthesis from the most indeterminate and abstract to the richest and most concrete concepts: the dialectic method reproduces in the consciousness of the thinking subject the sense of reality itself. In these conditions, philosophy is amenable to historical understanding, provided that history itself is not simply a description of unconnected events but an intelligent and regular concatenation. The usual idea of the history of philosophy, however, is far removed from such a conception: what is offered under this name, or rather, the idea we form, is a disorderly succession of opinions that are often strange, a veritable museum of extravagant ideas: and what could be more futile than the mere knowledge of a series of opinions? What curiosity is it capable of satisfying, apart from that pedantic curiosity which indeed clings to the futile? Let me add that this succession of conflicting opin-

ions only strengthens all the prejudices which the superficial mind so readily welcomes against the possibility of philosophy: every effort to introduce philosophic truth into the world is met by Pilate's ironical question: What is truth?

It is the idea of development that enables us to reject this superficial view of the history of philosophy. All development is the realization of a potentiality. That which is potential in a subject passes into action as the result of development. Thus, one and the same subject passes through a number of states and degrees: this does not prevent it from being essentially one and the same subject. In the present instance, the subject that is the one and the same is philosophy; whereas the various historical philosophies are states and degrees in its realization. The fundamental theme is the knowledge of pure thought for itself; the successive and progressive variations of this theme—the various philosophies—correspond each of them to a determination of thought which, *per se*, is necessary, immutable and eternal; each of these determinations appears in process of time as the principle of a doctrine; indeed, the doctrine is born and dies in time, like everything that obeys the law of time; the motion, however, which serves it as a principle, is immutable and indestructible; it is a necessary moment in the dialectic development of thought. In other words, the many succeeding symptoms are the chronological manifestations of a dialectic order of development which is eternal in itself; it is the temporal forms that the categories of thought assume. And just as the concepts by means of which human thought attains to higher levels do not altogether abolish the logically anterior concepts, but include as well as transcend them, so do the systems which replace the other systems retain of these latter, dominating and explaining it the while, the essential element which had been their *raison d'être*. Con-

sequently, all philosophy exists necessarily; no philosophy has wholly died; they all actually exist in genuine philosophy, as moments of a whole (see Hegel, *Vorlesungen über die Geschichte der Philosophie*, 1st vol., 13th vol. of the complete works, pp. 19-64).

The chief interest of this conception of Hegel's is that instead of contrasting philosophy with its history in such a way as to make this latter inoperative or even of a paralyzing effect on present philosophic thought, it makes philosophy—the philosophy which tends most to pursue the absolute—one with its history. It also makes of the sequence of the doctrines, not a contingent succession of episodes and opinions, but rather the expression of a continuous and regular effort to reach truth, through all its contradictory forms. When we agree that the knowledge of truth is subject to a law of evolution, we cannot set up as an argument against it the evolutionary development it has had to carry out, any more than we can regard this development as meaningless. In the sequence of doctrines, then, we find a reasonableness which enables us largely to recognize the reason of to-day. We may imagine that this conception of the history of philosophy, as set forth by the genius of Hegel, has attracted many a mind to this class of study; indeed, many of the great historians of philosophy produced by nineteenth-century Germany, such as Ed. Erdmann, Ed. Zeller, Kuno Fischer, while more or less repudiating, along the lines of research, the too constructive and too unanalytical methods of Hegel, all the same retained a great deal of his spirit.

The thing of course that is most arbitrary to us in Hegel's conception, is that it connects too closely the meaning of the history of philosophy as a whole with the triumph of the Hegelian philosophy. It must however be noted that a certain interpretation of this philosophy, while not altogether indisputable, at all events fairly natural, would do



away with all future evolution of the philosophy that would supply it with a history. Being the whole of truth and completely expressed, Hegel's doctrine would appear to leave to the dialectic order of concepts no other manifestations to produce in time.—Even if we remove from the Hegelian doctrine its most dogmatic content, it would still appear very arbitrary to interpret the march of systems in accordance with the law of a dialectic progress whose moments are predetermined. While it sometimes happens that we can bring some particular succession of doctrines within the scope of this very general scheme, it is only on condition we give this scheme no more importance than that of being a frame whose relation to the picture it encircles is merely one of symmetry or external proportion.

The main question, however, is to discover whether the sequence and the filiation of doctrines in time can be determined for us essentially by logical necessities. Now, if we admit that, throughout the successive doctrines, there is a certain regular development of philosophic thought and human intellect, and if we also admit that a new doctrine is linked on to those that have preceded it by relations which may be represented logically,—relations from principle to consequence, relations of opposition and of conciliation,—it does not therefore result that the transition from the prior doctrines to the following ones comes about in historic reality that can be apprehended by a law which imposes these relations *a priori*. In the way in which a new doctrine is built up, there are many factors supplied by the personality of the philosopher,—his own distinctive methods of formation, reflection and spiritual invention,—as well as by social traditions and renewals, sentimental aspirations and scientific requirements. Even if a kind of universal mind, advancing gradually in the direction of truth, were operating in all these particularities and contingencies; it would none the less follow that it is in these

particularities and contingencies, which are offered us at the outset, that we are able to understand something of them. At all events, we have no right to infer in what way the doctrines succeed one another; we ought mainly to attempt to determine a host of circumstances, irreducible to concepts, which guide this succession. The method of *a priori* construction in the history of philosophy must be rejected, from the historical point of view at least. Usually, when more or less consciously practised, this method is but the expression of a philosopher's thought projected into history, in order to direct its course.

We must apply the same reserve as regards attempts which, although mitigating the Hegelian method or even opposing it, make use of certain general determinations in planning the history of philosophy or distributing the doctrines. Having received in it the thought of Hegel,—without fully understanding it,—at all events accepting it only in order to modify and pervert it, Victor Cousin tried to prove that the multitude of systems can be quickly resolved into a few principal systems which, through their relations and combinations, are the essential and lasting factors of the entire historic development of philosophy. These systems, each of which is connected with no more than a part of the total reality to exalt it into a whole, both in type and in principle, are sensualism, idealism, scepticism and mysticism. Sensualism firmly believes in the authority of the senses and in the existence of matter; but it believes in nothing else. Idealism firmly believes in the existence of the mind and in the authority of the ideas belonging to it; but it believes in nothing else. While the inadequacy of sensualism brings about as a natural reaction the appearance of idealism, these two dogmatisms, by opposing each other, cast reflection into a state of uncertainty and cause it to proclaim the vanity of all scientific investigation: hence scepticism. Scepticism in its turn, unable to satisfy

the need to believe, awakens in the mind confidence in spontaneous and irrational inspiration: hence mysticism. These are the four great systems to be found at the root of all the historical developments of philosophy: naturally they combine and blend together; still, these are the true factors, alike vouched for by an investigation into the progress of reflection and by the study of history. And Cousin, with certain reservations, is inclined to think that they succeed one another in this order, for the mind investigates things of the senses before it investigates ideas; the contrast of the two dogmatisms is needed to lead to scepticism, just as lassitude regarding scepticism is needed to make mysticism into a doctrine. (*Histoire générale de la philosophie*, 1st lesson.)

In these considerations there is much that is vague and arbitrary: it would not be possible to include the history of philosophy in this law of the generation of the four systems except by very indeterminate definitions and artificial suppressions. Above all, at the origin of these remarks there is a very incorrect conception, the belief that the systems proceed from a kind of general element; we may call Epicurus, Locke and Condillac sensualists, and this may be regarded as true enough, though it overlooks the effort by which this element has been specified: now, it is specification that causes the interest, originality and potency of the doctrine.—There is nothing more vague than the term idealism, it may be used to include very different and even opposite doctrines.—On the other hand, while it may be said that the development of a certain intellectual tendency, a development carried more or less to extremes, causes the appearance of a contrary tendency, this is but a very simple scheme which affords us no information whatsoever as to the manner in which it assumes a concrete form.

In contrast with the Hegelian and eclectic spirit, Ch.

Renouvier in his *Esquisse d'une classification* and his *Dilemmes de la métaphysique pure*, has set forth a general view of the history of philosophy in the form of dilemmas dealing with various subjects: the dilemma of the unconditioned or of the conditioned, of substance or of law, of the infinite or of the finite, of determinism or of freedom, of things or of persons. These dilemmas call for an exclusive option, in contradistinction from the Hegelian antinomies which call for a reconciliation, and the series of the terms which are on one and the same side,—the first in the present instance,—must be rejected to afford room for the acceptance of the other series. This method of subjecting the whole of the systems to a dichotomic method may be interesting philosophically; still, it gives us no idea of historic truth. A doctrine like that of Leibniz, for instance, includes arguments which depend on the contrasted parts of the dilemmas: and while this is a striking instance, it is far from being the only one. The eclectic method, by preparing us to understand the comparing of ideas and their fusion, ideas that are at the outset heterogeneous or incongruous, is probably more favorable than this dichotomic method for studies in the history of philosophy.

By setting forth and criticizing some of the principal attempts by means of which we have tried to fix the objects and methods of the history of philosophy, it has been our sole object to show that the practice of the history of philosophy may not be so easy a matter, since an exact and definite idea of it is so slow and difficult to reach.

VICTOR DELBOS.

PARIS, FRANCE.

## PRAYER.

### ITS ORIGIN, MEANING AND ETHICAL SIGNIFICANCE.

IT MAY be said that the time has passed when the study of religion and of that religious feeling which is the "essential basis of conduct"<sup>1</sup> could be claimed as the exclusive product of a single body of men. With the growth of the science of comparative religion, and with the great importance now attached to the study of religious phenomena by psychologists and ethnologists, it is to anthropology that one must turn if religious values are to be fully understood. What is most remarkable is the fact that while on the one hand we have many Christian churches deploring the falling off in numbers of their communicants together with the universal apathy displayed by the laity at large to all matters of a religious character, we should have on the other hand, and as a result of recent scientific investigation, a value and a significance attached to the religious instinct which promises to be pregnant with future possibilities. If it were necessary to indicate, by one fact more than another, how great this interest is, one might point to that valuable and monumental work, now in course of publication, which deals with all the main factors of religious life and culture—with its mythology and its history, its superstitions and its ethics, its philosophy and psychology,<sup>2</sup> for "it is safe to say that there is no

<sup>1</sup> Thomas Henry Huxley.

<sup>2</sup> *The Encyclopædia of Religion and Ethics*, Edinburgh, edited by Dr. Hastings, M.A., F.R.A.I., and Dr. Selbie, M.A.

subject of modern research which concerns all classes as nearly as the study of religions."<sup>3</sup>

Until recent years it was held for the most part that barbaric and uncivilized man possessed little of the sentiment and feeling which we associate with the term "religion." He was given credit for the practice of hideous superstitions and of rites of the most abominable kind, but it was explicitly denied that he possessed religious feeling in any higher form.<sup>4</sup> Even authorities like the late Lord Avebury held that prayer itself, being to us a necessary part of religion, was quite independent of the lower forms of religion.<sup>5</sup> We know now that, not only is religion a matter of vital importance in the every-day life of the savage, being interwoven with all his habits, customs and mode of thought,<sup>6</sup> but that the practice of prayer itself is found to exist among some of the most savage races known to us. Even certain savage customs, barbarous and cruel as we may deem them, when traced to their fountain head are found to have arisen from the most pious motives and are carried into effect through the most earnest conditions.<sup>7</sup> What adds a deep significance to the value of the religious impulse is the undoubted fact that wherever and whenever a religion has been brought into ridicule and contempt, physical and moral decrepitude have followed as a fixed and a natural consequence. Having for my part paid no inconsiderable attention for some years past, to the effect of outside or alien influences upon the character of civilized and uncivilized man in various parts of the globe, it would be a most difficult task for me to name any race or tribe whose morale has not undergone serious degeneration

<sup>3</sup> See Committee on Publication, Brinton's *Lectures on the Religions of Primitive Peoples*, New York, 1897.

<sup>4</sup> Dr. Brinton, *ibid.*, pp. 30-31, referring to Lubbock and H. Spencer.

<sup>5</sup> *Origin of Civilization*, 6th ed., 1911, p. 402.

<sup>6</sup> See Ellis, *Tshi-Speaking Peoples of the Gold Coast*, 1887, p. 9.

<sup>7</sup> Ellis, *ibid.*, p. 9.

when once its ancient ritual and its religion have been brought into contumely. This being granted, the paramount importance of religion may be considered to be almost beyond discussion.

Writing some years ago, the late Auguste Sabatier, formerly Dean of the faculty of Protestant theology, Paris, declared that nothing better reveals the worth and moral dignity of a religion than the kind of prayer it puts into the lips of its adherents;<sup>8</sup> a truism which we shall find to be as applicable to the most primitive, as it is to the highest forms of religious development.

Many prayers have been recorded in recent years from savage races. An examination of these petitions shows that, in the great majority of cases, it is for material prosperity and gain that the savage prays. He asks that his crops may prosper, that he himself may be freed of danger, that no disease may befall his cattle or that they may not die.

Thus the Egbos, a tribe living in the depths of the bush in Southern Nigeria, pray to the sun and say:

"Sun of morning, sun of evening, let me be freed from danger to-day."<sup>9</sup> In another instance the prayer is to Obassi—a kind of ancestor god—"Obassi, everything was made by you; you made earth and heaven; without you nothing was made, everything comes from you."<sup>10</sup>

The natives of Brass, in the Niger Delta, before eating and drinking, present a little food and liquid to the household deity, and then offer the following prayer:

"Preserve our lives, O Spirit Father who has gone before and make thy house fruitful, so that we thy children shall increase, multiply, and so grow rich and powerful."<sup>11</sup>

<sup>8</sup> *Philosophy of Religion Based on Psychology and History*, 1897, p. 109.

<sup>9</sup> P. Amaury Talbot, *In the Shadow of the Bush*, 1912, p. 21.

<sup>10</sup> Talbot, *ibid.*, p. 66.

<sup>11</sup> A. G. Leonard, *The Lower Niger and its Tribes*, 1906, p. 292.



Writing of the New Caledonians, Dr. J. G. Frazer says: "If only wrestling in prayer could satisfy the wants of man, few people should be better provided with all the necessities and comforts of life than the New Caledonians."<sup>12</sup>

The Todas, a pastoral tribe inhabiting the Nilgiri plateau, offer prayer continually in their daily life. Dr. W. H. R. Rivers, tells us that these prayers are in the form of supplications to invoke the aid of the gods to protect their buffaloes. "May it be well with the buffaloes, may they not suffer from disease or die, may they be kept from poisonous plants, and from wild beasts, and from injury by flood or fire, may there be water and grass in plenty."<sup>13</sup>

To take another example from the Dark Continent, we find that the Bawenda, a Bantu tribe living in the north-eastern portion of the Transvaal, offer the following appeal during their annual sacrifices at the graves of their ancestors:

"O Modzimo, Thou art our father; we, Thy children, have congregated here, we humbly beg to inform Thee that a new year has commenced. Thou art our God; Thou art our Creator; Thou art our Keeper; we pray Thee give us food for us and our children; give us cattle; give us happiness, preserve us from illness, pestilence and war."<sup>14</sup>

While this feature, the desire for material gain, is a predominant one in all primitive ritual, it is hardly necessary for us to be reminded that it is also a dominant characteristic of all the higher religions. The great difference between the creed of the savage and the creed of the higher races is this, that while among the former it is material gain that is chiefly sought, among the latter the material

<sup>12</sup> *The Belief in Immortality*, Vol. I, p. 332, 1913.

<sup>13</sup> *The Todas*, 1906, p. 216.

<sup>14</sup> Rev. E. Gottschling in *Journal of the Anthropological Institute*, 1905, Vol. 35, p. 380.

factor has become, as it were, spiritualized, as we shall see when we come to examine the liturgy of the higher races.

Nevertheless, an ethical element is present in many prayers offered by races whom we, in common parlance, classify as "savage." Thus the Sioux of North America say:

"O my Grandfather the Earth, I ask that Thou givest me a long life and strength of body. When I go to war let me capture many horses and kill many enemies, *but in peace let not anger enter my heart.*"<sup>15</sup>

It will scarcely be denied that in the portion of this prayer italicized we have the appearance of an ethical element which is absent from the supplications taken from a lower stage of culture. Indeed, it may be said that, with a few verbal alterations this Sioux prayer might well stand side by side with many of those which still find utterance in the congregations of Christendom. And if it be thought that the ethical element in this prayer be an exception, surely the following incident would serve to dispel it.

At Fort Yates, overlooking the Missouri River, there exists at this moment a remarkable petrification in the shape of a woman with a child on her back, very life-like in appearance and which is venerated by the red Indians as a sacred relic. This figure was brought to the Indian Agency and set up in its present position at the suggestion of Mr. James McLaughlin, formerly Indian agent to the Sioux. A great council of Indians was held, at which it was agreed that the unveiling of the image should be performed by some Indian who could truly claim possession of all the Indian virtues. A warrior named Fire Cloud was selected. On the day of the ceremony, Fire Cloud, addressing the Great Spirit, prayed for peace, hoping that the erection of the monument would establish a lasting peace in all the land, not only between the Indians and

<sup>15</sup> Capt. Clark quoted by Dr. Brinton. *Ibid.*, p. 106.

the white men, but between the Indians themselves. He prayed that the Great Spirit would bless the rock and the place, so that they might be regarded as a pledge of the eternal cessation of warfare. Then, turning to his brother Indians assembled, he charged them that it was *their* duty to observe the laws of the Great Spirit, and that those among them who had not clean hearts and hands should stand abashed and humiliated in the presence of the woman of the Standing Rock and the Great Spirit. He then and there called upon them to repent and devote themselves to lead clean and pure lives in the future.<sup>16</sup>

During one of their ceremonies for initiation into the mysteries of manhood, the youth of the Omaha (a Sioux tribe) prays to Wako—the great permeating life of visible nature, itself invisible, but which reaches everything and everywhere. Standing alone in a solitary place, with clay upon his head and tears falling from his eyes, he, with hands uplifted, supplicates the Great Spirit to aid him in his need.<sup>17</sup>

These instances in themselves may perhaps suffice to show how important a place prayer does occupy in the mind of so-called savage and uncivilized man.

Let us now turn to the ancient civilized peoples of the Old World. A great number of prayers and invocations have come down to us from ancient Babylonia; many of them being exquisite invocations put into the mouth of worshipers, expressive of their deep sense of moral quiet, yet ending as Dr. Jastrow points out, in a dribble of incantations which had survived from a more archaic period.<sup>18</sup>

The prayers of the ancient Egyptians are familiar to most of us. Wake quotes from Bunsen the following

<sup>16</sup> James McLaughlin, *My Friend the Indian*, 1910, pp. 36-39.

<sup>17</sup> See 27th *Annual Report, Bureau of American Ethnology*, Washington, 1901, by Alice Fletcher and Francis la Flesche (the latter a member of the Omaha tribe).

<sup>18</sup> *The Study of Religion*, 1901, p. 213.

which shows how great has been the growth of the moral element in what had originally been nothing more than a magical formula:

"Oh, thou great God, Lord of Truth, I have come to thee, my Lord, I have brought myself to see thy blessings, I have known thee—I have brought ye truth. Rub ye away my faults. I have not told falsehoods in the Tribunal of Truth. I have had no acquaintance with evil."<sup>19</sup>

Turning to ancient Persia, we find in the Gāthas or Sacred Chants attributed to Zoroaster and forming part of the Yashna, the great liturgical book of the Avesta, many prayers of a high and lofty character. These chants are concerned with the nature and attributes of Ahura-Mazda, the Great Living Lord, the Most Wise. The first chant has been described by one of its translators—Canon Cook—as a perfect example of intercessory prayer, in which Ahura-Mazda is addressed as the Supreme Deity, and before whom Zoroaster stands as his prophet. Too long to quote here, it begins and ends with prayer and praise to the Lord of the Universe, but the following lines will give a faint idea of its import:

"With hands in prayer uplifted  
To Mazda, the quickening Spirit,  
I fain would give due honor  
To all who, by good works, win favor  
From Him, the Good, the Holy.

"The just, whom thou approvest—  
Righteous and pure in spirit,  
Do thou, O mighty Ormuzd  
With thine own mouth instruct from Heaven!  
Teach me thy words of power  
By which creation first was fashioned!"<sup>20</sup>

In another chant Zoroaster presents himself—body and soul—intellectual faculties, moral and spiritual—as an ob-

<sup>19</sup> Bunsen, *Egypt*, Vol. IV, pp. 644-5, quoted by Wake, *Evolution of Morality*, 1887, Vol. 2, p. 132.

<sup>20</sup> F. C. Cook, *Origins of Religion and Language*, 1884, pp. 212-216.

lation to the Supreme Being. Canon Cook considers this particular chant to approach more closely than any other Gentile teaching the Christian idea of worship as set forth in the New Testament.<sup>21</sup> We quote the following lines:

"Teach me to know the two laws,  
By which I may walk in good conscience,  
And worship thee, O Ormuzd,  
With hymns of pious adoration."

\* \* \*

"Oh, holy pure Armaiti,  
Teach me the true law of purity."

\* \* \*

"This offering Zoroaster,  
The vital principle of his whole being,  
Presents in pure devotion;  
With every action done in holiness;  
This above all professing—  
Obedience to thy word with all its power."<sup>22</sup>

Zoroaster's noble moral code, epitomized as it has been in three short simple words, "Good thoughts, good words, good deeds,"<sup>23</sup> is well illustrated by this translation of those beautiful psalms.

Modern Persia, through its thirteenth-century poet, may lay claim to have given Christendom one of those great lessons which, as experience has so painfully shown, is so difficult for many of us to learn and to practise—the lesson of toleration. In that poem known as the Mathnavi, which has been described as being perhaps the greatest mystical poem of any age,<sup>24</sup> Jalal-al-Din gives us the following exposition of the doctrine of largemindedness. Moses once heard a shepherd praying: "O Lord, show me where thou art, that I may become thy servant. I will clean thy shoes and comb thy hair, and sew thy clothes, and fetch thee milk." When Moses heard him praying so senselessly

<sup>21</sup> *Ibid.*, p. 256.

<sup>22</sup> *Ibid.*, pp. 247-248.

<sup>23</sup> Art. "Zoroastrianism," *Encycl. Biblica*, 1907, Vol. 4, col. 5435.

<sup>24</sup> *Encycl. Religion and Ethics*, Vol. 7, p. 474.

he rebuked him and said: "O foolish one, though thy father was a Muslem, thou hast become an infidel! God is a Spirit and needs not such gross ministrations as in thy ignorance thou supposest." Abashed at this stern rebuke the shepherd rent his clothes and fled to the desert. Then from heaven a voice was heard saying: "O Moses, why hast thou driven away my servant? Thine office is to reconcile my people with me, not to drive them away, for I have given to men different ways and forms of praising and adoring me. I have no need of their praises, being exalted high above all such needs. I regard not the words which are spoken, but the heart that offers them."<sup>25</sup>

The religion of the Arabian prophet abounds with beautiful prayers and moral teaching of the highest order. Probably the best known prayer is the opening supplication of the Koran: "Praise be to God, the Lord of all creatures, the most merciful. Thee do we worship and of Thee do we beg assistance. Direct us in the right way, in the way of those to whom Thou hast been gracious, not of those against whom Thou art incensed, nor of those who go astray."

In other prayers it is declared that it is not the formal act of praying that justifies, but the doing of that which is held to be right and good. "It is not righteousness that ye turn your faces in prayer toward the east or the west; but righteousness is of him who believeth in God, who giveth money for God's sake unto his kindred, and unto orphans, and the needy, and the stranger . . . and of those who perform their covenants when they have covenanted, and who behave themselves patiently in hardship and adversity and in times of violence, these are they who are true."<sup>26</sup> In another prayer the petitioner says: "O Lord,

<sup>25</sup> Whinfield's translation, quoted in L. M. J. Garnett's *Mysticism and Magic in Turkey*, 1912, pp. 51-52.

<sup>26</sup> Syed Ameer Ali, *Islam*, 1909, p. 9.

I supplicate Thee for firmness in faith and direction toward rectitude,—I supplicate Thee for an innocent heart, which shall not incline to wickedness; and I supplicate Thee for a true tongue and for that virtue which Thou knowest.”<sup>27</sup>

From Mohammedanism it is not unfitting to turn to Buddhism, from that great religious system of Arabia,—with its imageless adoration of Allah, the All-Powerful—to the religion of the Buddha, whose ethical system of philosophy is perhaps one of the the greatest the world has ever received, and whose image may be met with in thousands of shrines and temples in the Far East.

For four hundred years no greater contention has vexed Christendom than that of the use of images in religious worship. Yet, it may be seriously questioned, whether, after all, its true import and significance—its inwardness—has even been realized and understood; certainly not by those who are its chief opponents!

The study of the image ritual of uncultured races throws an unexpected light upon the attitude of those who profess a higher creed, but who still retain their images of wood and of stone. Not even the most barbaric of men believes that the image to which he prays and to which he makes his offering, is of itself a deity. It is to the spirit which enters the idol, as it were, that he makes his supplication. Thus, it can hardly be open to reasonable doubt but that such an attitude has been the precursor and the inaugurator of religion of a greater and a nobler type. Certain it is that not only in its lower manifestations, but in its higher ones as well the presence of an image, to those who believe in it, exerts a most powerful influence over its votaries, but that influence is, in the majority of instances, misunderstood by unsympathetic witnesses who may profess an alien creed.

Near Calcutta, in the little village of Bodh Gaya, there

<sup>27</sup> *Ibid.*, p. 8.



exists the temple of the Mahabodhi—"of the great enlightenment"—a spot sanctified and held to be the most holy on earth by some hundred and forty millions of the human race. That temple, recently repaired by the Indian government, contains a medieval statue of the Buddha.<sup>28</sup> What mystic influence that image must have upon the Buddhist worshiper, may be gathered from Moncure D. Conway's description of his own feelings, when he, the rationalist, paid a visit to that shrine during his "Pilgrimage to the Wise Men of the East." He says: "I feel as if I know something of Zoroaster and of Jesus, and these two are to me the men who knew the true religion. The real Buddha is more dim, but at Gaya the thought of that young prince, burdened with the sorrows and delusions of mankind, reached far down in me and touched some subconscious source of tears and love for the man, and I longed to clasp his knees."<sup>29</sup> Again, the Rev. John Hedley, a Protestant missionary, who visited a few years since the Pagoda of T'ai Ming T'a in Mongolia, tells us in glowing language of the emotions produced in his own mind when he beheld the standing figure of the Buddha erected in that "pagan temple." He says the image affected him strangely and profoundly, so much so that, at the risk of offending his sturdy nonconformist brethren, he calls it but simple truth to state that it would have been a comparatively easy thing for him to have knelt down before that image and pay homage to "One greater" than Buddha, of whose selfless life Buddha himself was so marvelous a forerunner.

"The sweet and gracious expression on that gentle face would have charmed an artist, inspired a poet, and captured the love of a devotee. . . . Had this figure stood in some venerable cathedral of the Catholic faith in Europe, the

<sup>28</sup> Mitra Rajendralala, LL.D., *Buddha Gaya, the Hermitage of Sakya Muni*, Calcutta, 1878. *Encycl. Religion and Ethics*, Vol. 6, pp. 182-185.

<sup>29</sup> Conway, *My Pilgrimage*, 1906, p. 263.

most appropriate word to have written over it would have been the old familiar words of love and blessing, 'Come unto me, all ye that labor and are heavy laden, and I will give you rest.' I do not wonder now that some people find images and icons helpful to their faith. . . . For myself, it is not irreverent to say that though I bowed not my knee nor even momentarily inclined my head as I gazed on what in vulgar parlance we must call an idol, I realized my Lord more distinctly and drew nearer in spirit to Him."<sup>30</sup>

Surely it is time for us to pause, to rub our eyes, to ask ourselves whether we be in the twentieth century—with its coal and its iron, its corn and its pigs—or whether, after all, we are not back again in the old medieval times—with its saints and its sinners, its Madonnas and its suffering Christ? Once more the picture of Savonarola in his cell, with his crucifix before him, rises before us, as he re-pens the lines of that great prayer of his, known as the "Hymn to the Cross":

"Jesus! would my heart were burning  
With more fervent love of Thee,  
Would my eyes were ever turning  
To Thy Cross of agony.

"Would that, on that cross suspended,  
I the martyr-pangs might win,  
Where the Lord, the Heaven-descended,  
Sinless suffered for my sin!"<sup>31</sup>

Santa Teresa tells us, how, losing her mother at the tender age of twelve years, she went in her affliction to the image of Our Lady, and, with many tears, supplicated *her* to be her mother.<sup>32</sup> Upon another occasion, entering her oratory, her eyes by chance fell upon the image of the wounded Christ. "As I gazed on it, my whole being was stirred to see Him in such a state, for all He went through was well set forth; such was the sorrow I felt for having

<sup>30</sup> John Hedley, F.R.G.S., *Tramps in Dark Mongolia*, 1906, pp. 140-142.

<sup>31</sup> See G. S. Godkin, *The Monastery of San Marco*, 1901, pp. 67-68.

<sup>32</sup> *Santa Teresa* by Gabriela C. Graham, 1894, Vol. 1, p. 93.

repaid those wounds so ill, that my heart seemed rent in twain."<sup>33</sup>

Western civilization, with its immense and its intense material prosperity, has almost forgotten what it owes to the past. It may be that in some near future the infinity of that debt will be recognized and acknowledged. For, were one to search for the most beautiful examples of Christian prayer, which form such an essential feature of the Christian faith, it is to pre-Reformation times that one must turn. No greater battle has ever been waged over any book than over the Book of Common Prayer. Abhorred and hated by the early Puritans, denounced by them as being "full of abominations," and branded as "ridiculous and blasphemous,"<sup>34</sup> that book remains still unrivaled and unsurpassed in Christendom as a manual of true devotion. Yet nine-tenths of this book are no recent creation, but belong to the most ancient periods of Christian history. To certain Protestant historians is due the everlasting credit of indicating how vast our debt is. Milner says that the litanies which were collected by Gregory the First, in the sixth century, were not much different from those in use by the Church of England to-day.<sup>35</sup>

Perhaps the greatest eulogy of all has been pronounced by the Congregational historian, Dr. Stoughton. He says that, "as the sources whence the book was compiled are so numerous and so ancient, belonging to Christendom in the remotest times, as there is in it so little that is really original, so little that belongs to the reformed Episcopal Church of England, any more than to other churches constrained by conscience to separate from Rome—the bulk of what the book contains, including all that is most beautiful and noble—like hymns which, by whomsoever written,

<sup>33</sup> *Ibid.*, p. 142.

<sup>34</sup> See Hardwick, *History of the Christian Church*, "The Reformation," 2d ed., 1865, p. 260.

<sup>35</sup> *History of the Church of Christ*, Edinburgh, 1841, p. 414.

are sung in churches of every name—ought to be regarded as the rightful inheritance of any who believe in the essential unity of Christ's Catholic Church, and can sympathize in the devotions of a Chrysostom, a Hilary, and an Ambrose."<sup>36</sup>

In the Bishop's Book—known as the "Institution of a Christen Man" (Instruction of a Christian Man)—issued during the reign of Henry VIII, there is an exceedingly beautiful paraphrastic exposition of the Lord's Prayer, which may be considered a notable instance of that spiritualization of worldly desires to which allusion has already been made. The passage is too long for quotation in full, but we select the following which may prove sufficient to denote its character:

"Oh, our Heavenly Father, we beseech Thee give us this day our daily bread. Give us meat, drink and clothing for our bodies. Send us increase of corn, fruit and cattle. Give us health and strength, rest and peace, that we may lead a peaceful life in all godliness and honesty. . . . Give also Thy grace to us, that we have not too much solicitude and care for these transitory and unstable things, but that our hearts may be fixed in things which be eternal and in Thy Kingdom which is everlasting. . . . Give us grace, that we may be fed and nourished with all the life of Christ, that is to say, both His words and works; and that they may be to us an effectual example and spectacle of all virtues. Grant that all they that preach Thy word may profitably and godly preach Thee and Thy Son Jesus Christ through all the world; and that all we which hear Thy word preached may be so fed therewith that not only may we outwardly receive the same but also digest it within our hearts; and that it may so work and feed every part of us, that it may appear in all the acts and deeds of our life."<sup>37</sup>

<sup>36</sup> *History of Religion in England*, new ed., 1881, Vol. 3, p. 215.

<sup>37</sup> See J. H. Blunt, *The Reformation of the Church of England*, Vol. 1, 1868, pp. 448-449.

A passing reference at least must be made to the prayers contained in the Roman Catholic Service books,—of a church which has perhaps been more misunderstood and misrepresented than any other world-wide faith. From the prayers at mass we select the following, which show the high ethical standard of her creed at its best. "O Lord. . . Have mercy upon all heretics, infidels, and sinners; bless and preserve all my enemies; and as I freely forgive them the injuries they have done or mean to do to me, so do Thou in Thy mercy forgive me my offenses." Or again, take the prayer where the penitent prays for a spiritual cleansing: "O Lord, who once didst vouchsafe to wash the feet of Thy disciples—wash us also, we beseech Thee, O Lord; and wash us again—not only our feet and hands, but our hearts, our desires and our souls, that we may be wholly innocent and pure."

Can Protestant Christendom present to us anything more touchingly beautiful than the following? At Puente-del-Inca, between Argentina and Chili, and perched upon the highest pinnacle of the Great Andes, there is to be seen a colossal figure of Christo Redemptor—Christ the Redeemer. Cast from bronze cannon taken from the arsenal at Buenos Ayres, and erected to celebrate the establishment of peace between those two countries, it was bequeathed, not only to Argentina and to Chili, but to the whole world, that from that monument it might learn its lesson of universal peace. On its pedestal one may read: "Sooner shall these mountains crumble to dust than Argentineans and Chilians break the peace which at the feet of Christ they have sworn to maintain."

At the opening ceremony the Archbishop of Argentina, Monsignor Espinosa, offered the following prayer so inexpressibly beautiful that one cannot refrain from quoting it *in extenso*:

"Lord, when my voice is silent, when my eyes cannot

behold Thee, and my heart, already changed to dust, disappears with the remembrance of my existence, Thine image, represented in eternal bronze, shall be a perpetual offering on the highest pinnacle of Argentina. When the white snows shall close the path to men, permit that my spirit may keep vigil at the foot of this mountain. Protect, Lord, our country. Ever give us faith and hope. Let our first inheritance be the peace which shall bear fruit and let its fine example be its greatest glory, so that the souls of those who have known Thee shall be able to bring forth from Thee all forms of blessing for the two Americas. Amen."<sup>38</sup>

This noble petition may well form a fitting close to our review of the invocations of civilized and of barbaric man. Having passed under examination the attitude both of civilized and uncultured man toward the Unseen, as illustrated to us by examples of his petitions and prayers, we are now in a position to form an estimate as to their moral value.

As we have said, the study of a religion can no longer be claimed as the exclusive business of the theologian or the divine. A new science has dawned—the science of mankind—and with it, that mantle which formerly rested upon the shoulders of its Elijah, has fallen upon those of the Son of Shaphat. Therefore, it is for science now to estimate religious values, to measure all moral worth, and it is not too much to say that her verdict will be in accordance with nature's laws. Like all her sister sciences, the science of ethnology recognizes law everywhere, no less in the prayers of man than in those starry realms far beyond his unaided ken.

Prof. Max Müller once declared that he who knows but one religion knows none. With equal truth it may be said that he who scorns the religion of others is not himself

<sup>38</sup> Percy F. Martin, F.R.G.S., *Through Five Republics*, 1905, pp. 358-359.

religious. The day of the scoffer, of him who jeered and held to contempt the faith of another, has passed away. Scientific men at least have too great a respect for nature herself to jibe and jeer at those things which, after all, they may not understand. All they do claim is that all knowledge and experience shall be subjected to the same method for investigation, whether it be the study of a piece of granite, or the interpretation of a prayer.

Just as the exposition of certain "spiritual phenomena" at the hands of Christian theologians is not necessarily in accordance with religion itself in its highest aspects, so the explanation of the phenomena of nature by scientific men is not necessarily "science" in itself. For example, some theologians tell us that the answer to prayer is a process of violation of natural law. "The general providence of God acts through what are called the laws of nature. By his particular providence, God interferes with these laws."<sup>39</sup> In opposition to this particular theologic doctrine, the student of nature holds that, so far as human experience is concerned, *all* phenomena—subjective and objective—*must* be interpreted in accordance with natural law. So far as his knowledge reaches, nature never discards her own laws, for if she *could* set them aside she would cease to be natural. Therefore, if the act of prayer possesses any value to man at all, it is from man himself, as part of nature, that one must obtain an answer. The appeal must be to the natural, not to the supernatural; it must be based upon human experience, not upon human supposition.

There is definite reason to believe, outside all supernatural explanation, that the art of prayer and the desires that prayer itself inculcated, is as necessary a part of the psychological evolution of man as any other process of nature.<sup>40</sup> In itself the act is an outcome of an ethical law

<sup>39</sup> See Hook, *Church Dictionary*, 6th ed., 1852, art. "Prayer."

<sup>40</sup> See (Sir) E. W. Brabrooks' "Anniversary Address," *Annual Address Anthropological Institute*, 1898. *J. A. I.*, Vol. 27.



of the highest order, and is only foolish and inconsistent when it becomes a mere jumble of impossible requests.

In its higher manifestations it creates in the mind of the supplicant moral feeling and desire of the highest character, exciting him to attain those spiritual ends of which his feelings are but the expression. As Lecky has so well put it: "The man who offers up his petitions with passionate earnestness, with unfaltering faith, and with a vivid realization of the presence of an Unseen Being, has arisen to a condition of mind which is itself eminently favorable both to his own happiness and to the expansion of his moral qualities."<sup>41</sup>

Man recognizes as a universal law that certain results follow certain acts—be they good or be they bad—as sure as night follows day. The naked savage knows instinctively as it were, that if his actions follow a certain course, certain ills may befall him. While the reason the savage gives in explanation may be a superstitious reason, and therefore no reason or explanation at all, still we cannot fail to discern a natural law which, whatever its origin in the native's mind may be, is nevertheless productive of ethical results. It is for this reason that uncontaminated primitive man is a moral man—as nature herself hath willed. He holds that calamity and disease, fire and flood, are punishments sent in some way or other because of wrong-doing. He believes that nature is angry with him, therefore by his acts he desires and attempts to appease her. While it is true that nature may not show her anger in the way that uncultured man thinks, there is more in this recognition than one might deem.

In a theological work published quite recently, it has been declared that "the scientific student knows nature is not angry and does not require appeasement."<sup>42</sup> As a mat-

<sup>41</sup> *History of European Morals*, 1894, Vol. 1, p. 36.

<sup>42</sup> "Concerning Prayer," art. by the Rev. Harold Anson, M.A., 1916, p. 83.

ter of mere fact, the "scientific student" knows nothing of the kind; rather he has reason to believe that nature is angry, angry because certain of her laws have been thrust aside, and that she has replaced them by other laws, not less natural, but which produce disease. "The sins of the fathers" and the results thereof, are no less a process of natural law than is the unconscious act of the falling apple a law of gravitation. Even the savage recognizes this, hence his abstention from doing certain acts which are prohibited to him by ancient custom.

For hundreds of years in Christian lands, it has been considered an incontrovertible truth that suffering and calamity are punishments sent by God. In the work just quoted—a work in which the lack of modern prayer is bewailed,—we are told that religion has contributed much to immorality by speaking of suffering and calamity as a judgment imposed by God upon sin, for God does not impose the consequence of evil.<sup>43</sup> This is a most remarkable pronouncement, a pronouncement which shows the position to which recent theologic thought has been driven. The old Hebrew prophet knew life better when he declared that God created the evil as well as the good.<sup>44</sup> Substitute the word "Nature" for "God" and we have the clearly defined position of the man of science. But while we are content to leave to the theologian the interpretation of the mind and the acts of God, so far as modern science is concerned, there can be no possible doubt but that suffering and calamity *are* in many cases imposed upon man by nature, as a consequence of ill-doing.

When a man prays, he asks to be taken by the hand and led away from destruction, so that he may prosper and the right prevail. Modern psychology has shown that the creation of ideals in the human mind leads by a natural

<sup>43</sup> *Ibid.*, art. by Arthur C. Turner, M.A., p. 428.

<sup>44</sup> Isaiah, xlv. 7.

process to the desire to attain those ideals.<sup>45</sup> Prayer feeds that desire and so leads to their ultimate attainment.

We have pointed out the fundamental difference that exists between the prayer of great religions like Christianity and Islam, and the prayer of some of the lower races of mankind. While the former supplicants pray that they may possess all the great moral qualities, and that their life and character may be moulded so as to produce the noblest and the highest result, the latter ask, in the majority of instances, for those things which add to their material well-being. By examples we have shown that, though the material factor is constantly present in the higher religions, still it is spiritualized in the highest possible way.

Mankind at large has many lessons yet to learn; not the least of these is the serious recognition of that law of nature which goes under the name of "evolution."

Among all "civilized" peoples, there is a growing tendency to forsake that narrow path their forefathers trod, and to divert their course to that broad way which, as we were formerly taught, leadeth to destruction. To-day science can only emphasize this truth our forebears taught us.

Looking around we find man bent upon destruction—everywhere—waging iconoclastic wars of all descriptions. He topples over old idols—some of them foolish ones may be—and erects in their place idols more hideous than existed before. He destroys that which the past itself held to be bad with that which the past knew to be good. He attempts to substitute the "gospel of hatred" for the "gospel of peace and good will" as a "new way to righteousness."<sup>46</sup> He flings "overboard law, religion and author-

<sup>45</sup> See Ribot, *Psychology of the Emotions*, 2d ed., 1911.

<sup>46</sup> "We preach the Gospel of Hatred, because in the circumstances it seems the only righteous thing we can preach." Leatham quoted by Sir William E. Cooper, C.I.E., *Socialism and its Perils*, 1908, pp. 33-302.

ity,"<sup>47</sup> to give us in place thereof a society where atheism and anarchy are supreme, and where the family exists no more!<sup>48</sup> Man is thus attempting to divert nature's course to lead her into paths of his own devising; nevertheless, whatever theologians may now teach, it will be with nature herself that man will have to reckon and whose bill he will have to pay upon her just demand.

The pronounced evils of our day—envy and hatred, malice and greed, no less than war and pestilence—have ever been the result of evil-thinking and evil-speaking; our forefathers were not so far wrong after all when they held that these were punishments, and that war followed in their trail. Were an analysis to be attempted as to the origin of many great wars, it would be found that they were brought about by the greed of man and by the desire to obtain that to which the offender had no right. The story would be that of Naboth's vineyard over and over again. It is from disasters such as these that it is the duty of the Christian to pray, so that his desire may become the father of acts which will frustrate those ends to which his greed would otherwise lead.

There are other great evils beside those of war and of greed. He who manifests ridicule and attempts to bring into contempt those beliefs held sacred by others, has his own lesson to learn. Toleration is the one great virtue which the West may well learn from the East. Even the naked savage never ridicules the religious beliefs of his

<sup>47</sup> Prince Krapotkin, quoted by G. W. Tunzelmann, *The Superstition Called Socialism*, 1911, p. 108.

<sup>48</sup> Congress held in London, July 14-19, 1881. "Resolved—that all revolutionaries be united into an International Revolutionary Association, to affect a social revolution, money to be collected to purchase poison and weapons, ministers of state, the nobility, clergy and capitalists to be annihilated." See E. V. Zenker, *Anarchism*, transl. from the German (1898, p. 231).

"In the new moral world, the irrational names of husband and wife, parent and child, will be heard no more." Robert Owen, quoted by Sir W. E. Cooper, *loc. cit.*, p. 41.

It has been stated that a large number of Labor M.P.'s have been or are local preachers of anarchism. See Peter Latouche's *Methods and Aims of Anarchism*, 1908, p. 14.

fellows; it is a besetting sin, not of savage, but of Christian lands.

To live aright, man must conserve, not destroy. He must once again learn to "leave undone those things which he ought not to have done," and "do those things which he ought to have done," for Nature herself insists.

Were modern science asked for one final word, surely it would be this: If to pray means to create and nourish in our minds those thoughts and aspirations whereby we may live a "righteous and sober life" and not follow the "devices and desires of our own hearts," then she would say—"PRAY WITHOUT CEASING."

Pray that our actions may be so shaped that they conform to Nature's will: that she may be our protector, not our avenger; pray that all erroneous teachings—those superstitions of to-day which arouse the passions of the hustings—MAY CEASE!

To the Christian especially she would say—Pray ye in the spirit and in like manner of that old Catholic saint who told you that,

"You were made Christians to this end, that you may always do the works of Christ; that is, that you love chastity, avoid lewdness and drunkenness, maintain humility and detest pride, because our Lord Christ both showed humility by example and taught it by forwards, saying, 'Learn of Me, for I am meek and lowly in heart, and ye shall find rest for your souls.' It is not enough for you to have received the name of Christians if you do not do Christian works, for a Christian is he who does not hate anybody, but loves all men as himself, who does not render evil to his enemies, but rather prays for them; who does not stir up strife, but restores peace to those who are at variance."<sup>49</sup>

To those, whatever their creed may be, who are unable

<sup>49</sup> Homily of Caesarius, Bishop of Arles, attributed to St. Eligius, quoted by Dr. Maitland, *The Dark Ages*, 5th ed., 1890, pp. 134-139.

to share those thoughts which others revere, she would say: Let us not forget how very little our exact knowledge really is and remember that there may still be many more things than we wot of. Pray therefore that you may sympathize where you cannot understand; for what matters it if some tread a devious path, so long as nature wills?

Lastly, she would ask all mankind—with its divers antagonistic creeds, with its love and its hate, its war and its peace, its weal and its woe—to turn to that great figure in bronze, which tops the heights of the Volcanic Andes—that sublime symbol not of the peace that is, but of the peace that ought to be—and in the silence of those now quiescent rocks, say with Shelley:

"Join then your hands and heart, and let the past  
Be as a grave, which gives not up its dead  
To evil thoughts."<sup>50</sup>

So that all storm and strife, and sobs and tears may cease, and a new era dawn, where Nirvana—that "peace which passeth all understanding"—shall reign, and where, once more,

"neath the sky  
All that is beautiful shall abide,  
All that is base shall die!"<sup>51</sup>

EDWARD LAWRENCE, F.R.A.S.

ESSEX, ENGLAND.

<sup>50</sup> *Revolt of Islam.*

<sup>51</sup> R. Buchanan, *Balder the Beautiful.*

## RATIONALISM AND VOLUNTARISM.

IT may be of interest to consider some of the relative claims of rationalism and voluntarism, that real and explicit antithesis of recent times, whether we regard either theory in full or extreme form as satisfactory or not. Neither of them is, in fact, satisfactory in any absolute or exclusive sense. Their consideration is the more necessary as extreme forms of voluntarism are by no means rare in the thought of to-day. There is no need in doing so, to forget that, in every psychosis, there will be elements or rudiments of feeling, willing, and thinking, though one of these may have a dominating influence. Rationalism stands for thinking, as the great form or mode of realizing conscious content. That is to say, the essential activity of mental life is for it thought or ideation. Rationalism is concerned with logical priority rather than with the question of genesis, hence it here stands aside from psychology—though I do not mean to leave it untouched—which is concerned with genetic order. The logical priority of thought—thought-activity as the absolute *prims* of the world—is the maintenance of rationalism. For in no other way can you get the world as a world of meaning. Neither blind feeling nor blind will can yield such. But thought, standing by itself, does not suffice to create a world.

Pure thought needs the supplementing of will. That is the defect of rationalism. Will is not moved by reason alone, thought Hume, for he subjects reason to the feelings, as some still do. His stress on passion fails of justice to



reason. A further defect or mistake of rationalism has been to undervalue the senses. But experience is too exigent for the tendency to neglect or underrate the senses to be wise. The part played by sense in experience-processes is too important to be overlooked without impoverishment. Thought can come to its own without countenancing this mistaken tendency. Thought, as we know it, never does exist severed or divorced from feeling and will. That is not to say that thought or reason may not have a dominance, a logical priority, a primacy of rank. That is quite another matter from time priority. The time primacy claimed for feeling by some psychologists is denied by rationalism in respect of any feeling-consciousness taken as pure or wholly without rudimentary representation, real however latent. Representation in some sort must be taken to precede feeling—feeling as accompanying sensation.

But, if we distinguish these two, I should take feeling as purely subjective, and sensation as carrying an objective reference or element. This, although certain German philosophers hold all sensations of subjective origin. The unity of sensation, for Rosmini, was intelligence. Not much help is vouchsafed by Höffding's rather vague definition of feeling as "an inner illumination which falls on the stream of sensations and ideas." Feeling is often regarded or treated only as it springs from the stimuli in sensational experience. Thought supervenes on such sensation; and in this usage of feeling, my next remark holds good of it; feeling wholly without presentation or idea must be valueless for action. That is not to deny the dominance of feeling that may exist in certain cases or stages. But that is not the case where reflection is developed, for there the idea or the presentational element is supreme. "In tal modo," says an Italian writer, "l'attività del sentire progredisce dall'interno all'esterno" (N. R. D'Alfonso,

*Piccola Psicologia*, Rome, 1917, p. 30). For our knowledge of the external world, sensations are to be followed, not despised. But reason is the organ for the supreme discovery of truth.

Voluntarism stands for the primacy of will or some form or mode of effort-consciousness. It takes will to be the source and the sustaining power of mental life. It may be blind will or impulse, as in Schopenhauer; it may take the form of impulse and idea in synthesis as exemplified in Lotze and in Wundt, although Lotze may be held to recognize too much more than one fundamental mind-function for a real voluntarist; or it may begin with the idea, but hold, as in Royce, that the idea appears in consciousness as an act of will. Touching what has just been said of Lotze, it is he who has said, for example, that all the acts of daily life never demand "a distinct impulse of the will," but are "adequately brought about by the pure flux of thought." Lotze veers, indeed, from a rationalistic mode of thought toward positivist tendency or direction. On genetic grounds, of course, voluntarism will have much to say for itself—hence Paulsen and Wundt have striven to set it upon a psychological basis—since, in the matter of time, early or rudimentary forms of consciousness will be largely blind or impulsive in nature. Paulsen accordingly makes impulse the basal function of the inner life. More generally, I may remark the very unscientific and unwarranted tendency of voluntaristic psychology to found itself on "conation" in ways whereby that term has been stretched far beyond anything consciousness can sanction as processes really volitional in character.

But the weakness of voluntarism lies in the fact that not even the earliest forms of *Trieb*, impulse, or feeling-will, can be admitted to be without germinal representation or rudimentary thought. We must think of some undifferentiated whole, out of which the various mental

powers, or characteristics, evolve, instead of assuming will as the base of a gradual intelligence. We must take account of the progressive embodiment of reason to be found in all sentient life. We must hold to internal structure in such wise that the psychosis is not the absolutely simple thing it is sometimes supposed to be. Binet has declared that psychic manifestations are much more complex than is supposed, even in the lowest scales of animal life. Schopenhauer sets his world of feeling-will over against reason or thought, but his *Trieb* or impulse is not really will in any proper or developed sense, and is not exclusive of feeling. In fact, the ground of life, which Schopenhauer chose to call the will in all things, was in reality something psychologically so chaotic, that no world could have come of it that was not irrational and meaningless. Nietzsche made voluntarism the underlying moment of his psychology of religion. For a central experience of will is what he always seeks, as affording a measure in the direction of religious metaphysic. But of the will-theories of Schopenhauer and Nietzsche, it is to be said that the will, properly conceived, never acts blindly or without reason, which latter is, in fact, the determining factor of mental life, since it enlightens and directs the activity of the will.

The world of appetitions, to which, since the time of Leibniz, the term will has, in inexact and even mythological fashion, been applied, does not constitute the realm of will at all. For, obviously, there can be no proper willing without an idea of something that is willed. The qualitative constancy which Wundt has sought in the will—as compared with ideas and with feeling—is too abstract and mythical an affair to be psychologically satisfactory. The fault of a radical voluntarism, like that of Fichte, is that in it pure will regards itself as an end, and wills merely for the sake of willing. It is, for it, not a case of

objects, but of willing itself—absolute will, cloaked as a natural impulse to independence. Clumsy and confused is the way in which Fichte tells us that “reason is reason,” and in the same breath insists that “the will is the living principle of reason—is itself reason.” The truth is, reason or thought is by him subordinated to will or our striving energies, in unwarrantable voluntaristic fashion: will is made antecedent to knowledge. But this idea of absolute will is unsatisfactory, in that it only too easily becomes a detached and unrealized ideal, arbitrarily viewing everything as a mere expression of its will. It is a case of the transcendentalism of will overleaping itself, and vaulting the heavens. This brings us to note the absurdity of voluntarism in taking, as the chief characteristic of life’s mental powers, something which is found in complete abeyance as life reaches its highest. For in hours of pure thought, or in seasons of calm esthetic contemplation, it cannot be ignored how disinterested is thought, nor can it be pretended that anything like actual or conscious willing is anything but absent, in both cases. This is all that is then evidenced of Royce’s true but irrelevant saying that “our will is always dramatic in its expressions” (*The Problem of Christianity*, Vol. II, p. 297). Yet voluntarism thinks it congruous to make this sleeping partner figure as the most distinctive, and indeed the all-devouring factor in our mental life. It is extreme, and straining experience, to say of such times, like Höffding, that “we must *will* to see, in order to see aright.” That, of course, is not meant to imply that will is not present.

What Royce calls his “absolute voluntarism” begins with the idea, but immediately asserts that the idea appears in consciousness as an act of will. This seems a somewhat hasty and violent psychological treatment of the idea, almost reminding one of Condillac’s, when he made the idea a sensation representative of something, in spite of their

difference being one of kind: my ideas, *as* ideas, *are* ideas, and not just anything else you please. It might surely have sufficed to make ideas also aims and ideals: they are not yet acts of will. But that would not satisfy Royce's mystical pan-egoistic epistemology, and so his rather chaotic voluntaristic psychology declares that "the idea is a will seeking its own determination." "Ideas are thinkable but absolutely unknowable," a writer has said, in the sense of knowledge as ordinarily understood. And "every idea," said Rosmini (in his work *On the Origin of Ideas*), is "universal and necessary." In another connection, Royce has said, less objectionably, that "the motives of an idea are practical, and the constituents of an idea are either the data of perception, or the conceptual processes whereby we characterize or predict or pursue such data" (*The Problem of Christianity*, Vol. II, pp. 181-182). The ideas appear to be really, at most "proposals for volition," as the case has been put, and the idea must be selected, as Bradley says, by something which is not an idea; they may thus become idea-forces, as Fouillée termed them; but the primacy of the idea is not to be obscured or lost sight of, even though its intellectual functioning is not to be disjoined from the volitional and emotional activities which it mediates and determines. The dominance of the idea in consciousness is the primary fact with which we are here concerned, and one which cannot be filched away by voluntaristic violence. This primacy can be maintained without giving the intellectual ideas or terms any too abstract air or character. But let the idea vanish, and what will become of motive-feeling and volitional impulse? The particularity of sensation, and the universality of the idea, need not be forgotten. Even in stages where, psychologists say, sensation dominates, it might be worthy of better remembrance that we become aware of the presence of a sensation only through thinking. Not sensations, but our

thought of them, is what differentiates us from the animal creation. Sensation is concrete and particular, while thought always carries an element of universality. Where there are sensations, there, said Rosmini, the primitive synthesis is made by the mind in a spontaneous manner. And (in his work on *Logic*) Rosmini differentiated intelligence from sensation in a meritorious manner. "No other faculty," said he, "except the understanding, has for its term an *object*." This last is intuited, but, to know this, he maintains, there must be an act of reflection upon the intuition. Therein the understanding is different from the feeling. For "the felt is not object but simple *term*, and the faculty of feeling has not the *essential property* of the faculty of understanding." Rosmini thus avoids the confusions as to sense which marked Aristotle, Kant, and others of more recent date. Feeling, as Rosmini insists, is made up of that which feels and of that which is felt, and intellective perception is not to be confounded with feeling, since feeling in this sense must "precede the act of thought which observes it." It is not to be forgotten that, as Stout is pleased to put the matter, sensation exists *in*, as well as *for*, the mind (*Manual of Psychology*, p. 209), although this requires some further explication to render it quite satisfactory.

Reason remains a power perceptive, regulative, dynamical—the concrete unity of our organized mental energy. It is by virtue of this dynamic reason that we act in freedom. Freedom is a necessity of the purpose-positing activity of intelligence. That means the freedom of the reasonable will, not the blind voluntaristic will that treats reason as its bond-servant. The reasonable will rules the feeling-life and the impulse-life in the quest of its concrete ideal. Not even the appeal of Rousseau to inward feeling or sentiment was free of considerable elements of ratiocination. True, in his unsystematic way, he could say that

ideas came from without, and that sentiments sprang up within the soul. But he did not completely disjoin them, there being, in his view, senses in which "ideas are sentiments, and sentiments are ideas." But he sometimes joined the sentiments to reason, treating them as its necessary completion. For, with all his insistence upon the "heart," he uses sentiment in a way which does not always exclude cognitive elements. Still, there is in Rousseau the tendency to make the sentimental outweigh the rational, although it cannot be said that the sentimental was, in him, void of reference to reason, or always destitute of theoretic thought. The importance of feeling, however, is not to be underestimated, since it reflects the ethical quality of the person or represents the personality in its immediate self-consciousness. Ribot has represented a revolt against intellectualist theory here, freeing feeling from dependence on presentation, and treating it as an original state, and it may be allowed that the intellectualist theory was often unduly pressed. At the same time Höffding is right in holding that cognitive elements are already present, and do not simply arise out of formless and primitive feeling, as is seen in the early calling forth of memory in connection with early pleasure and pain experiences.

Hume had already given high place to feeling or passion, for what was taken to be the determination of the will by reason, Hume regarded as really its determination by calmer or more tranquil feelings. His rejection of the primacy of will was, of course, unsatisfactory, being in favor of a species of impression: reason was by him made subject to the feelings. Dr. Bradley does vastly better in his *Essays on Truth and Reality* in rejecting "in any form the primacy of will" (p. 96). He rightly contends that "bare will is no will," and that "will involves not only perception but also idea," which he finds "hard to reconcile with a secondary position of intelligence." I have myself



in a large work, entitled *A Philosophical System of Theistic Idealism* (Blackwood, 1917), not only opposed voluntarism and taken reasonable will to be the only true idea of will, but have shown the straits of voluntarism, and its baleful influences in recent philosophical thought and philosophy of religion. In this I have ranged myself, but on independent grounds, with Meumann and other continental thinkers who stand for the primacy of intelligence. An all-controlling will, at whose demand alone all reason, no less than all value, can have any being, in the manner there shown, can only yield a very bald and unsatisfying psychology, one which is utterly impotent to do any manner of justice to reason. In taking reasonable will—will enlightened by prevenient reason—to be the only true idea of will, I hold, like Bradley, idea to be essential to will. I take, equally with him, the notion of the idea being often the creature of a blind impulse to be quite inconclusive (*Mind*, 1902, p. 462). For impulse without consciousness of end is not will in any proper sense. If there has been no suggestion of idea, there has been no real willing. Dr. Bradley even speaks of the "monarchy" of the idea, and of the "single idea," all other ideas present in the volitional process being, in his view, subordinate or contributory to the "total idea." I should prefer to think more of the primacy of reason than of idea, taking the process to be more concrete, as a unity of reason. Reason views all in the unity of the idea, and it effects the needful fusion of ideas. Bradley's stress on one idea seems to me apt to make the volitional process appear rather thin and bald for all the facts. Even if we take volition to be "the self-realization of an idea with which the self is identified," such self-identification must be taken to imply that the volition is the act of my concrete self, in which the idea reigns. But it might be objected that ideas do not—in the modifying light of evolution—dominate and function in us in the

detached and isolated manner which Bradley is apt to represent. They are set in the reason, which is a representative of the world-reason, and it is of a unity or totality of reason we have first of all to think. It is, however, desirable that the idea, as a psychical existent, should be as clear and distinct as possible. But stress on the willing must not be obscured. "In the end," says Bradley, "my union with the idea must remain essentially a felt union" (*Mind*, 1903, p. 152). And again, "volition is the identification of my felt self with the idea" (*ibid.*, 161). But this seems to me rather artificial, and separates the idea too much from the self, for the idea is already my idea; reason in me is a unified force, which goes out from the unity of the idea, and forms the totality of the idea of which Bradley speaks. Reason is the "I" itself indeed, which proves itself reasonable in the process, as the idea is taken up as a willing. Bradley denies that "desire and conation are to be found in all cases of will," and says that to make them the "bridge" in volition would be "absurdly deficient" (*Mind*, 1904, pp. 20-21). On both points I agree with him. Blind conations are not volition; mere desire is not will. He therefore abides by the view that will is not "original or ultimate," since the passage of an idea into existence is, for him, the essence of will. Varisco, too, holds it "essential to will" that it be "enlightened by cognition," and be "altogether one with cognition," but his attitude is less clear-cut and defined. There is, in my view, a lordship of reason in the entire process which leads to harmony, for the resultant whole is the unity of intelligence and will in the human consciousness. The impulse of reason toward unity is not satisfied until such unity is achieved. The content of reason is the ideal, the necessary, the universally valid. But the universality, Rosmini clearly laid down, is of the mind or the intelligence, and not in things or sensations; we may not even speak, *sensu stricto*,

of a universal idea, for not in their content, but in their applicability, are ideas universal. Ideas are singulars; the qualities that belong to universality are given them by mind.

Thought has none of the particularization of sensation: to think is to universalize. The idea is all-important to Rosmini, for it is the light of the mind, however impossible that it should be defined. It will be seen that I take reason or intelligence to precede and determine the will, and the psychical activity involved to be fundamentally real; the time relations connected therewith do not prevent or disturb me, for though time in some aspects and relations is real, it is not ultimate, nor regnant in the realm of spirit. Thus I do not regard all inner psychic activity as in the end will-activity, for there are many psychic occurrences outside will-activity. I reject bare will, in all its arbitrariness, as the ultimate source, while not denying, of course, how will-activity sticks fast in all thought. I am, of course, aware how it has been attempted to justify the statement that all psychic activity is will-activity, by seeking to distinguish an empirical-psychological voluntarism from a metaphysical voluntarism, the latter partaking of the universal character of metaphysic. But I am here only incidentally concerned with empiric voluntarism, in which will is made to include or swallow up feelings and sensations, and impulses are taken as lower forms of will, and even made at times to figure as if they were pure will. But even when the distinction just made is observed, it does not follow that the empirical-psychological account of the development is never overweighted in its stress on will, when ideas or representations and feelings are all taken to be developed therefrom. I am myself sceptical of this account of the development, both as to its doing prelude justice to the representation or reason-elements in the process, and still more as to its being a

satisfactory account of the relations found to exist between developed intelligence and developed will. It is only by abstraction that we can determine or fix upon the part played by all the individual psychic elements or factors in the process, and though the phenomena of will lend themselves most easily to observation, it does not follow that justice has always been done to the potency of rational and feeling elements or moments likewise. I do not admit will, in its active efficiency, to be anything else than bound, in certain fundamental ways or principles, to representation and thought connections, and the question is, whether this, the more difficult and recondite part of the process, has been satisfactorily performed. I do not think it has. Will, of course, has had its development, just like every other psychic function, and besides will, there is at least always representation, if arbitrariness is to be shunned. For there is no pure activity, but only such as has been qualitatively determined by representation or content. The element of knowledge is an inseparable moment in consciousness, and it is not derivable from will. Not even the representations should be derived from will, when sensations and feelings are also present.

Wundt's theory of "idea-object," as original datum of thought, might surely have led to more satisfactory issue touching the ideating forces. It seems to me not without arbitrariness that Wundt makes the will a standing element in knowledge in the way he has done, and treats the representations as accidental or contingent. His qualitatively constant will is an untenable conception, and the standing thing is the self-identical subject, to whom the will belongs. Activity has no content save as belonging to such a concrete subject, of whom it is a manifestation. Talk of complexes and totalities of psychic elements is vain without this being recognized. Nor do I think it admissible—because arbitrary and not true to experience—to

regard the manifoldness of the representations found in experience, as bound into a unity only through will. This seems to me to indicate some failure to appreciate or realize the unifying force or activity in reason, which does not stand idly by will.

If will is never bare will, never mere activity, but always representing activity, there appears to me no adequate ground for blindly quenching or ignoring any rational elements involved—the unifying power or activity of reason—in order to hypostatize will alone. Intellectual elements are already present with the representations; thought begins only with these last, not yet with concepts, which arise out of them; in the original perceptions thought has already found the conditions for its exercise. But I had not meant to do more than make passing reference to empirical-psychological aspects. We must not forget that hypothetical metaphysical conceptions or ground principles must not be applied to, or exchanged with, empirical-psychological abstractions, in the treatment of reality.

But empirical-psychological treatment is not therefore final, or above the need of criticism. Metaphysical voluntarism, however, is my main present concern. Analysis of the concepts of the understanding and inquiry into the transcendent ideas, are a special care of metaphysics, whose fundamental principles are immanent in the impulse of human reason to knowledge. Pure will is to Wundt the end of the psychological regress, but pure will is merely an abstraction of metaphysical value in bringing into clear view the essence of absolute being. To make, in the Wundtian style, the "inner impulses" the source of all need for thought is no satisfactory theory of our mental life or personality; nor do we recognize as will what acts blindly, without reason, or motives, or reflection.

On the other hand, the rationalism which we oppose to one-sided voluntarism is not one in which there is a mere

*ens rationis*, but a subject with the characters of concreteness and individuality. The subject must have a content, original and individual, and not independently of external relations, the external world being its necessary correlative; as Wundt says, "a consciousness without objects is an empty abstraction." When the voluntarist tells us the many mighty things wrought by will, he is apt to forget that will essentially implies cooperation of the individual and concrete subject, whereas reason can be conceived without such subjective reference, as capable of being embodied, objectively and universally, in laws or in relational systems standing by themselves (Cf. F. de Sarlo, *Il Concetto dell' Anima nella Psicologia Contemporanea*, Florence, 1900, pp. 33-34). It is not surprising that Mr. A. F. Shand should say that "the profoundest introspection will not show us the universal character of will" (*Mind*, 1897, p. 325). But the varied and different types of will need not keep us, for all that, from saying with Ladd that "willing is of essentially one kind" (*Philosophy of Knowledge*, p. 190).

To treat of synthesis without an individuality, of spontaneity without an individual subject, in Wundt's fashion, can never be satisfactory in result. The psychic elements and functions owe their efficacy and worth to their seat in the real subject, however we may try to abstract them for supposedly scientific purposes. There is no very convincing reason why the treatment should deprive itself of concreteness and lucidity, by trying to dispense with, or ignore, a real subject. Of course, the procedure is intelligible enough, in its desire to avoid older modes of thought in which the soul or subject was viewed too substantially rather than potentially, too much as something given rather than something formed, but the avoidance of wrong ways of regarding the subject does not necessitate vain attempts to eliminate an abiding, self-identical subject as persisting through

experience. The facts of unity, coherence, continuity, identity, and evolution, in mental life or personality, are, otherwise, not adequately covered or dealt with. The psychic acts or facts by which we live are not so sufficient unto themselves as Wundt would make it appear, and the reduction of everything to will-activity is far from satisfying.

Dr. Stout has made the significant admission that it is "the cognitive side of our character which gives determinate character to the conative." But what we have already seen of the attempt to set out the psychological origin, nature, and growth, of this cognitive side, has been by no means promising or satisfactory, for it has been mainly in terms of that which is not cognition. In the end we are driven pretty much to let cognition certify itself. Not even Wundt's position that the active mental representation or *Vorstellung* is originally identical with the object can be sustained. Cognition would be defeated by the object being so identified with the representing subject.

Wundt says thinking is willing, and so distinguished a thinker as Ladd remarks that this is "admirably" said. But is it so admirable? If the thinking is not a willing *per se*, it seems to me only a needless confusion. One does not deny the presence of a will-element in thinking, but the thinking is still thinking, and is not, so far as it is thought, to be called willing without a misuse of language. At least I am rationalist enough to think so. I am not unmindful, in saying this, that Bradley—whom I greatly honor in spite of some deep divergences from him—has said, properly enough, that will and thought are implicated the one with the other (*Appearance and Reality*, p. 474); but he has also said, less desirably, that "the same psychical state is indifferently will or thought, according to the side from which you view it" (*ibid.*, 468). Surely the facts can have justice done to them without countenancing so many terminological inexactitudes of this sort in psychology as



a "science." In no other "science" are clearness and distinction at such a discount.

The dependence of will on thought or idea, and the dependence of thought on will, can surely be recognized without blindly identifying them. It is only "to a certain extent," says Bradley, they are essentially one, but they are "not two clear functions in unity," which may be granted; but, granting this partial fusion or identity, their divergence is the thing that waits for explanation. This Dr. Bradley does not attempt, but is content to urge that neither thought nor will is primary and ultimate. What he fails to bring out is the unity of human personality, the unity of consciousness, in which feeling, thinking, and willing are three sufficiently fundamental modes of expression. Ideation may be a process given to consciousness, and thinking a more self-conscious and selective affair, but, though there may be a teleology of thinking, and though will may enter as a moment in the thinking process, yet thinking is still distinctively of the nature of thinking, and not willing or anything else.

There need be no failure to appreciate the part played by the will-element in thinking as a discriminating and relating activity, in so maintaining the distinctively rational character of the thinking process, even when it is the "sinewy thought" of stressful life. I reject, in like manner, the position of those who, like Bradley, treat thought as unreal, and make it consist of feeling transformed. Thought is still thought, and not feeling, though they are, of course, inseparably joined in the unity of consciousness or knowledge.

Willing, too, is unique, and not resolvable into thought or feeling. I have declined to run the whole primary consciousness back into pure will-activity, but in that early stage, though presentation or the knowledge-term was present, intelligence may very well have been so far under

the dominating influence of will and feeling elements as not to have attained any real independence. The presentative faculty may well have needed growth and development before cognition came to anything like independence and mastery. The process was a complex one, and must not be too abstractly conceived in the cognitive interest, without consideration of feeling and volitional factors. But when the distinctively cognitive supremacy was at length gained, the idea or the presentational element took the place of clear control, which rationalism claims for it, over all else. Will-activity I have not taken to be the ultimate thing, for that activity appears to be only a mode of realizing some condition of consciousness which is not of the nature of will.

In the developed subject it is that knowing and feeling and willing find their deepest point of unity, or the final ground of their hanging together, however one or the other may have at one time been found predominating. This is the *Gesamt-Ich* or total-ego, a personal unity. There is in such a subject an identity of knowing and willing—I mean, in the unity of consciousness or the personality. And it is, as I have already pointed out, not with the genetic point of view we are really concerned, but with the metaphysics of consciousness as here and now developed. In this consciousness relation, the voluntarist cannot be allowed to hypostatize the will-element alone, while the rationalist claims to do so for the knowledge-element also, and the primacy indeed of the idea, the perception, is the contention of the latter. For there is certainly something absurd in the idea of volition without any idea on the part of the willer of the end or thing to be willed.

A voluntary act includes, among other things, a volition or determination to bring about a particular result. Even Münsterberg holds an idea of the result to be brought about an essential factor in voluntary action. In volition there is

always an idea seeking realization. Volition is sufficiently complex to require both presentation and feeling. But the transition from idea to realization is not effected so simply as might be supposed, or without extraneous considerations and connections. And, again, in the case of cognition, no combination of ideating-processes and no theory of ideas, will suffice to yield cognition. The processes are, as I have insisted, all bound up, both in the case of thought and in that of will, in the personal unity of individual life or consciousness. But in the complex called consciousness, the primacy of the idea is, to rationalism, to be maintained, for to it belongs the power of initiative, but this primacy of intelligence is not exercised without mediation of the feeling and willing factors. For a purely thinking consciousness would be an utter unreality and abstraction.

The relations of thinking and willing with which I have just been dealing belong to consciousness itself, which latter admits of no explanation that does not presuppose that very consciousness. The inner connection of the various contents of consciousness is indubitable. But the synthesis of elements which goes to form consciousness or personality is one which has never yet been explained. This conception of personality is of central importance for psychology, and calls for more explicit recognition than Bradley has given to it. For what we plainly are called to do is to give more rational character to the relation of the single elements — even the non-intellectual ones — whereof it is composed. And to the thought or knowledge element this task of imparting greater rationality is difficult enough, for it is involved in being itself, which is also in process of becoming.

As Höffding, in dealing with the "Problems of Philosophy," has said, "it is a strange contradiction in the grand rationalistic systems, that, although they may be able to explain everything else, yet they are powerless to explain

the striving laboring nature of the thought which produces them." And should it be, as he remarks later, that "the empire of Being may be much vaster than the possibilities of our experience," the limitations to our complete rationality of view come into sight. For all that, it is the business of reason or the speculative activity to follow on to the furthest limits possible, so that thought and being may grow always more approximately one. In doing so, thought must not be regarded as a purely subjective activity, or isolated from its objects and their relations. For, as Riehl has remarked, in these objective relations "there must be something analogous to the activity of thought, something corresponding to the form of this activity, else this activity could not arise" (*Science and Metaphysics*, ed. by A. Fairbanks, p. 306).

I am an ideating self and a willing self, but I am a willing self because, and after, I am an ideating self: the connection, however, may be as swift and intimate as you please. But my ideas are certainly present, as rationalism contends, before they are actualized by will. They do not wait on will demand, as voluntarism contends. Nor is their actualization a pure matter of idea and accordant volition, for being other than the idea or the volition is involved in the actualization, as Ladd has clearly shown in his *Theory of Reality* (pp. 482-483).

In the light of all I have advanced, the view of Wundt—adopted by Külpe—which regards apperception and will as ultimately one and the same function, is not at all satisfying. Needlessly complicated, it is too emotional, the feelings being the spring of action and not the representation, and all the processes which are made up of feelings being taken to arise from volition as fundamental fact. Wundt says it is impossible to find out how a volition proceeds in any other way than by following it exactly as it is presented

to us in immediate experience. I entirely agree, and it is on this precise ground that I reject his theory of it.

Is it not surprising that Rehmke should have felt dissatisfied with the uses made of the term *Vorstellung* in voluntaristic discussions. At one time you may find it stand for something given; at another time it means an inner activity or event; in another instance it will serve for an image in us; it does duty for the represented, but again for the representing; now it is superfluously styled conscious, and now it is, in self-contradictory fashion, termed unconscious. And the apparently simple and easy theory of a blind, dull, senseless will which is supposed in voluntarism to have first borne sway, and worked its way in the world up to self-consciousness, is by no means either easy or accountable, for how this unconscious comes to consciousness is never satisfactorily explained, at least in the higher spheres of spirit, even when we allow for unconscious occurrences in nature. It has been vainly attempted to explain consciousness as only the passive product of unconscious actions, without taking any proper account of the reason immanent in the process.

There is no sure footing for our deepest experience in feeling; we need valid ideas—ideas not dissociate from reality. Feeling has need of idea, which, however, must not get divorced from feeling, of which it is meant to be the guide. But reason is not the mere adventitious thing which voluntarists like Schopenhauer would make it, waiting on the bidding of will. Reason is to be regarded as intellectual rather than conative; it is concerned with axiomatic truths or the fundamental ideas, principles, norms, or laws of reason. Reason is utterly underestimated or misconceived when it is reduced by such voluntarism to a merely pragmatist attendance on will and practical needs. Will, when divested by Schopenhauer's voluntarism of the element of knowledge, is utterly abstract and unreal.

But, of course, rationalism by itself does not suffice to give a rounded whole in our view of reality, and, in claiming primacy for intelligence, it is not meant that due consideration is not also to be given to will and feeling factors. Man is not reason alone, however disinterested, any more than he is will alone or feeling alone. But in freeing reason from non-rational factors, we must take an organic conception of man in his truth-seeking capacities and powers, and give will and feeling values their due place. This can be done, without forgetting that these values are stamped with relativity and subjectivity. This will keep us from falling into the modern snare of undervaluing the truth or reality values so dear to reason. Nothing will be exempt from the sway and scrutiny of reason, but truth will be sought with the whole man, feeling and will cooperating toward the vital and concrete results of the quest.

But this reckoning with the non-intellectual factors does not suffice, in our view of the meaning or philosophy of life, for we must go on to a world-view, infinite in its reaches beyond our own world of reason. And if the will and feeling facts and values import pluralistic tendency and direction as against the monistic tendency of reason, justice may yet be done these former elements or factors, in our system of thought, while the constructive power and activity of reason systematically builds up its final or ultimate monistic issue.

It can, of course, be said that under this monistic sway of reason, justice to facts and values may not be done, but it is just the task of infinitely patient constructive reason to see that justice is done. The thing is to see that reason remain living, concrete, and grow not rigid, abstract, and unreal. Such reason will advance the realization of the normative ideals, but not in merely formal fashion, without comprehending the foundations of the empiric world. Facts and values must not be distorted or wrenched but properly

articulated in the system, while not allowed, in recalcitrant fashion, to defeat or impede a final unity of reason or of system.

Although not primarily concerned with psychological developments, but rather with the experience of the developed consciousness, I have yet noticed some of the more extreme and insupportable contentions of psychological voluntarism. I shall add yet another example of the somewhat overdone emphasis and over-dogmatic tone of such presentations as exemplified by Prof. J. H. Leuba (in *The American Journal of Religious Psychology and Education*, 1907, p. 309). He says, "Aristotle characterized man as *thinking-desire*." We are to take this as an epitome of Aristotle! The fine things uttered by Aristotle touching intellect and reason—reason in its rule of desire and passion—apparently do not exist for the voluntarist. "Will without intelligence may be possible," Leuba says; rationalists deny it is anything of the sort. It would not then be will. And the converse is much more conceivable—if that were of any consequence—as Meumann and others have contended.

Leuba takes the usual voluntaristic pleasure in minimizing thought, reason, and intellect. "The function of intelligence" is reduced by Leuba to the "gratifying" of "desires, needs, cravings," a not very exalted role. All spontaneity of thought, all finely disinterested reason, are swept away in this crude subservience to desire. "Thought does not exist for itself; it is the instrument of desire." "We think because we will." It is scarcely to be wondered at that the rationalist finds little satisfaction in these modes of indulging in the humiliation or degradation of reason, the highest, divinest thing in man. But it reacts in lowering the psychological system itself, which seeks to effect such reduction.

I have run intelligence and will back into unity or har-



mony within the human consciousness—into the unity of personality. And from this, and what we have seen of the impulse of reason for unity, we may say that the constitution of the mind “predisposes man for monism” (Dr. P. Carus, *Fundamental Problems*, p. 21). My own results lead me finally to a spiritual monism, in which spiritual reason is for me the ultimate principle. One finds a correlation of subject and object, of “I” and “not-I,” of soul and body, of consciousness and existence, of nature and spirit, of God and the world, but we cannot rest in the end without running these back, under causal points of view where necessary, into some principle or power that embraces them all, and inwardly binds them all together. For though we may have a relative dualism and individualism—which, though relative, does not contemplate anything of the nature of blank absorption—yet is the impulse of reason for unity never satisfied short of an all-unity such as I find in the Absolute and Eternal Reason. For monism is the last word in philosophy, and such a spiritual monistic principle is for me *fons et origo* of the universe, with dualisms and correlations finally grounded in it as fundamental principle. But that World-Reason has effectiveness, for it is also World-Will, and is indeed the unity of the Ideal and the Real.

JAMES LINDSAY.

IRVINE, SCOTLAND.

## CRITICISMS AND DISCUSSIONS.

### THINGS ARE NOT ALWAYS WHAT THEY SEEM.

No man or woman is ever so much deceived by another as by himself or herself. The girl deceived by the lover, the rube-fooled by the bunco-steerer, the merchant lured by the stock market, the fat gentleman with the bank roll duped by the sweet little maid, the lobster hooked by the salamander, are gulled less by the hocus-pocus, chicanery and deceit of the Salomes and Judases than by the tricks of their own thoughts.

Experimental psychology has contributed a large number of new discoveries which explain all this. Time was when philosophers, beetle browed, knitted and knotted in wrinkles, with ponderous spectacles and professorships, would sit in their garrets or hermitage and evolve some theory or notion to explain whether the world was made of green cheese, a blue fancy, or something real.

For tens and hundreds or thousands of years philosophers have fought French duels of wordy battles as to the existence of anything round about or not. To plain people, who have bumped their heads on door knobs or burned their fingers in a fire, it might seem the Olympus of folly to debate whether a piece of sausage and a dog are the flames from your heated imagination or something actual and real.

But philosophers are not supposed to be either plain or matter of fact. They are apt to pursue words and phrases, no less than thoughts, into all sorts of mazes and devious channels. If they at times run into a blind alley, a *cul-de-sac*, or against a stone wall, the matter is lightly dismissed with "we shall return to that later."

Experimental psychology takes neither philosophies, philosophers, innermost thoughts, or words seriously. This experimental science of the real world as distinct from the image of thought

world may be likened to philosophy and the psychology of other years, as a man is to his reflection in a mirror.

The one is active, movable, changeable, up and doing, while the other is merely the reflected ray of light. One is the substance, the other is the shadow. One is a creature that acts upon and is acted on by everything round about. The other is uninfluenced by or uninfluencing the world.

In fine, laboratory, experimental, objective, and the "test" psychology of to-day, takes nothing for granted, admits no "authorities" other than real facts open to, admitted and acknowledged by ninety-nine and nine-tenths percent of sane persons. The older psychology of psychics, spirits, mind reading, telepathy, "seeing-things," "spiritism," and images and thoughts of isolated "professors," "mediums," "experts," "writers on malaria," "descendants of Oliver Wendell Holmes," and the like, are all found wanting by objective psychology.

Recently this refreshing science has undertaken to find out why everybody sees things, not as they actually and truly are, but each in a different way. It has been found for the first time that there is no such thing as a pure, unadulterated, accurate, unmixed sensation.

This will be a blow to physiologists, physicians, and medical men generally, all of whom still teach that when you see a bulldog with his teeth in the seat of a pedestrian's trousers, you really see what you think you see. Nothing else. This is a clean uncomplicated sensation you are falsely taught.

Philosophers of a certain ilk may teach, if they like, that when a saucer of milk is lapped up by a kitten, there never was any real milk there in the first place. They may hold to this superideal world of non-reality. That is not what these experiments of psychology show. What they do prove, however, is the fact that the eye, ear, and other sensation receivers and mouthpieces, as years advance from infancy upward, become moulded and impressed in such a way with repeated happenings of the past in such a wise that they have a real physical power of prophecy.

Coming events cast their shadows before simply because the eye, muscles, tongue and ear are set like a mouse-trap or like the trigger of a gun—to wit, to spring forward far beyond the needed requirement; to foresee and forehear, to forestall what one has seen and heard so often before.

In other words, if you see an automobile, a runaway horse, or a batted ball, although each one is entirely different and describes an absolutely new and distinct kind of motion, yet you will see it exactly as you have seen many others before it.

When you meet a new acquaintance you are prone to think you have met him before or see that he "looks the spitting image of a dear friend, Mr. Blank." I, myself, wear a Van Dyke beard and an imperial mustache. There are a score of men stouter, taller, shorter, darker, lighter, and with hair on their heads—I am well-nigh bald—who do not resemble me in the slightest, yet who are constantly told because they happen to wear beards—also unlike mine—that they look like me or I look like them.

That the ear is never true; that even Caruso, Farrar, Galli-Curci and the best musicians cannot hear sounds as they actually are, is easily discovered experimentally; that even those with a marvelous sense of hearing can never hear exactly what took place or what caused a particular sound, is proved in the laboratory. Little instruments that resemble brass helmets can be made to imitate bees, birds, the sighing of the wind through trees, the breaking of waves on a beach, thunder, roll of drums, violins, oboes, and so on.

Various sounds are made from these "resonators" and real bees, flies, parrots, musical instruments, and noises are also used. Any series of sounds used for some days previously leaves such an impress upon the subject's ears, that subsequent tones or noises are interpreted and heard almost before they are made, in terms of the sounds previously and formerly repeated.

It is a law of nature that light travels faster than sound. You can see a puff of smoke some time before you hear the shot. You can see the batter hit the ball some seconds before you hear the crack of the bat.

Yet you will find on analysis that bits from operas and songs that you hear hundreds of times a day, and other familiar and oft repeated tones are heard as quickly as you see. The experimental psychologist knows this to be another example of hearing things before they happen. This is true, scientific foresight due to habit, past experience, and multitudes of repetitions. The eye and the ear have become linked thus so often that the instant the eye sees a certain thing, the ear hears its necessarily associated sound. This fraction of a moment's anticipation or "prophecy" becomes fused with actual sound, which comes a moment later.

Echoes are often heard double for this reason. The sound is heard from habit and also as a later rebound. People who "see things" such as ghosts, spirits, and departed guests have much the same experience.

Seeing halos around the head; seeing people before you meet them—wrongly explained as coincidences or as something mysterious—are all due to the fact that you see the things which you have seen oftenest.

A patch of color, of light, and of shadow is usually all you see of anything. Yet you instantly recognize that distant blend as Larrie Jones or Goldie Summers; Don Quixote, who in Cervantes's novel charges and takes distant windmills for knights, is not a bit more amusing than the rest of humanity. Knights were in his thoughts as well as among his associates—at least in costume—hence he saw them.

There is but a slight difference between sane persons who see an orange when a yellow colored globe is thrown into the air, and the drunken man who sees rats without cause or the insane one who has the delusion that the veins on his arms are wriggling worms.

Indeed the only way you recognize a friend, a book, a doorstep, a fruit, a tree, or what not, is not altogether because of any sensation you receive at that moment, but from the past experiences, repetitions, and intimate memories of the past.

When you absentmindedly trace your steps home at night you may not be aware that past experiences are responsible for your seemingly rational behavior, but you have not consciously seen a house number, a doorstep, a post, a tree, or any of the landmarks which are needed to guide a stranger.

A dog, a cat, or a horse is no different from you. They find their way home, not because they see any peculiar home signs, but because they perceive a lot of complex, conglomerate things oft associated in their cosmos with that spot. A dog perceives his master, not by smell or sight according to Prof. John B. Watson of Johns Hopkins—as has been taught, but just as the master himself recognizes his children, namely, by a mixture of complex perceptions.

You turn corners, cross roads, avoid lamps as well as people, not because you see them, but because you perceive them. You may be talking to a companion, and at the end of your walk you may find yourself quite unable to recall a single moment when your

movements were specially modified to suit an actual need, though you have probably accommodated yourself in this way many times. The frequency of past experiences of the kind has established what you have previously called a psycho-physical disposition which now works itself out on the occasion of the appropriate stimulus with the slightest intervention of consciousness. In like manner, an experienced teacher pursues the course of his lesson without any conscious effort to watch the more mischievous members of his class—yet no irregularity escapes his notice, or fails to produce a suitable though to the casual observer scarcely noticeable, response.

In the young child, all such dispositions are in the making. His mental life is therefore necessarily bound up very closely with his actual environment, as it changes from moment to moment. If he is walking in the road he must attend to the line of the footpath, the gas lamps and the people, or disaster would attend him at every turn. Repeated experience leads him to make the necessary muscular adjustments whenever he is about to step across the line of shadow or of light which marks the change of level from road to footpath, until finally the muscular changes take place with accuracy and precision with the exercise of little, if any, conscious control, whenever the situation demands it. This leaves the mind free to pursue any line of activity without reference to normal changes going on in the immediate surroundings.

You see then, how closely the process of perception is related to that which governs the formation of habits. It is possible only because of that fundamental quality of retentiveness which leads to the formation of psycho-physical dispositions. At the same time, it must not be supposed that the development of the perceptive powers is merely a development toward automatism.

The sensory bases upon which experiences rest are so slight that it is not surprising to find error creeping in, especially when perception takes place under the influence of unsatisfactory proof-readers. The thought and the particular phrases in which it is cast suggest the words before the eye reaches them. You tend to see what you expect to see, and miss the printer's errors. Under emotional influences, like that of fear, for example, such misinterpretations are particularly common. A nervous person walking along a country lane finds a miscreant's footsteps in the fall of every leaf, if you are waiting anxiously for a telegram, how many times do you hear the footsteps of the messenger and the sound of the door-bell!

Every slight sound is the occasion of such erroneous mental construction. It is clear, however, that illusions, which is the name given to misunderstandings of this peculiar kind, are not due to any inaccurate working of the nervous mechanism of sensation. The possibility of mistakes of the kind may perhaps be regarded as the price paid for the power which the accumulated but latent fruits of experience give to you in your perceptual adjustments. The sensory element in perception is often so entirely outweighed by those traces of the past which are involved in the process, that the actual sensory object is enormously modified or even practically replaced by something else which corresponds more closely to existing and very lively dispositions.

In both perception and illusion there is always present some sensory element and even those traces of past experience which are revealed when either process is subjected to analysis are also sensory in origin. Ultimately, then, the knowledge of the physical environment rests upon the evidence of the senses.

Every one knows what Bunyan meant when he wrote of the "five gateways of the soul," but increasing knowledge has taught that the traditional five senses do not exhaust the list. Perhaps the most important of the more recently discovered sensations are those which are due to the movements of muscles, tendons, and joints, which play so large a part in enabling you to gain control of your movements, sensations of heat and cold, other organic sensations from internal parts of the body and sensations of pain, all of which are due to the stimulation of nerve-structures specially adapted to respond to a particular type of stimulus. A visual sensation may be more or less bright, a sound-sensation more or less loud, a sensation of pressure may be more or less light and so on. These are differences in intensity. Again, visual sensations vary in color, sound-sensations in pitch, temperature sensations may be hot or cold and taste sensations may be sweet or salty, sour or bitter. These are typical of what are called qualitative differences, and the student will readily notice how much more delicately these differences are related in the case of light and sound than in the other cases.

It is particularly important that one should realize the difference between the sensation and the stimulus to which it owes its rise. Most people see sufficiently for all practical purposes, without knowing anything about vibrations of the ether or the change which they



cause in the minute structures which lie in the sensitive layer of the retina. The psychologist is not directly concerned with either of these things. It is in seeing as you all experience it that he is interested. The physicist or the physiologist tells you that those other things happen and you accept his word for it, but you are not conscious of these events; they do not enter into the experience of the person who sees, in the way that color and brightness and light and shade do. These, then, are the sensory objects the apprehension of which he discusses. A like distinction is also to be drawn between all other sensory objects and the stimuli to which they owe their appearance in consciousness.

Moreover, in actual experience you never merely sense color for instance, but perceive a colored thing. The mental processes which are set up by sensory stimuli are always interpretative and therefore perceptual in character. Whenever you see, you see something. Ordinarily you can name or describe it. So with what you hear or touch or taste. But these interpretations had to be learned, except in so far as precise reflex machinery provided for right response to such stimuli.

In general, the tendency is to shrink from those contacts which produce discomfort, and to seek those which give satisfaction. This shrinking or seeking attitude which the infant learns to adopt toward objects around him is his first interpretation of his sense experience. Conscious purpose is still undeveloped, but when he hears a voice, his head turns, seeking, as it were, the visual sensations which usually accompany that sort of sound. His mental life is at first chiefly of this order. Increase of motor control greatly enriches his sensory experiences and deepens the significance of the things around him. In other words, percepts become fuller: color differences, differences in size and shape, position and distance are all perceived with gradually increasing accuracy; to sensory stimuli his reactions grow increasingly varied and delicate with these growing powers of discrimination. The process is especially rapid in regard to the things which afford him bodily comfort or with which he plays or which he otherwise puts to use. Instincts like fear and curiosity prompt experimental interpretations of new sensory experiences, but his action in these cases, even when most foolish, has its basis in what he has done previously.

In your own perception you will readily distinguish the dominant play of purpose. When you are thirsty, the cup of tea has

only one aspect—a thing to take in the hand and carry to your mouth. When thirst is quenched, your china-collecting interest may assert itself, and the shape and design of the particular cup may strike your eye. If you want a certain book from your shelves, to that and that only your eye is directed. You may not even notice that other books surround it. In a casual outward glance, the unfamiliar strikes you and excites a closer examination, but commonly your interests and purposes determine your perceptions. If you are enthusiastic about birds, every twitter catches your ear as you walk through country lanes and a new note instantly arrests your attention, while your friend the botanist sees nothing but the flowers in the hedge bottom.

What you call observation is precisely this purposeful attention to the things which strike your senses. You do at times give yourself over to casual and almost meaningless noting of the things that pass before your eyes, as you sit in a railway train for example. But this is not observation in the right sense of the word. If, on the other hand, by force of habit, or by specific intention you are on the lookout for special features in the changing landscape, geological, historical, or other landmarks, your survey is purposeful, you become observant. Under the influence of a particular interest, your perception becomes remarkably acute. The sailor sees land on the horizon long before the passengers on the ship, and the traditional red Indian can follow a trail through the woods which would defy the ordinary white man. Popular opinion is apt to ascribe the power of the red Indian to special acuteness of vision, but recent researches into the psychology of savage races throw considerable doubt upon this view. It seems more probable that experience, quickened by the necessities of the situation, has taught him just what to look for, and how to interpret what he sees. The same explanation is, in all probability, true of the sailor's quickness to see the coast line which may be fraught with danger, or the first sign of the nearness of home.

At the same time, the capacity for sensory discrimination may be improved by the formal training of graduated exercises. Within certain limits fixed by physiological conditions that vary with every individual, the delicacy of the ear is improved by exercises which necessitate discrimination in the pitch of musical notes. Similarly, you will find that regular practice will prove the power of "seeing" distances, or delicately adjusting your muscles to the handling of

a billiard cue. But improvement in sensory discrimination goes ahead much faster when you feel that something really depends upon it. In the life of the young child, formal training has usually no place. His sensory development is a product of experience, and of his growing sense of power among things which every day acquire new meanings for him. He has no established interests, but the objects about him have for the most part become familiar, in the first instance, as sources of pleasurable sensory activity. He has "played" with them; then he puts them to use on his own initiative and in original ways. Informally he "picks up" a great deal of practical knowledge concerning the physical properties of objects. He finds out that some things will break when they fall and others will not, that some things are hard and others soft, that he cannot carry water or milk as he carries a piece of wood, that his father's chair is heavier than his stool. He is already in the path of learning, but his experiences are disordered, and his actions are almost entirely prompted by momentary circumstances. His development will be marked by an increasing coherence in his behavior. His perceptions will come more and more into the service of purpose, gaining thereby in acuteness as well as in richness of content.

It is important to realize how relatively late the power to look at objects in an impersonal way develops. A child in the Kindergarten is interested in objects because of the part they play in his everyday life—not in their shape or color, or size, or in their relations one to another. The ordinary child of three or four who looks at a picture still sees the persons and objects upon it in isolation. If you ask him to tell you what he saw, you will learn that there was a man, and a girl, and a horse, and so on. The pictured objects are just representations of things that have entered into his own experiences, and nothing more. At five or six he is curious to know what is going on in the picture—he is interested in other people's doings as well as his own. A year or two later he will observe more particularly the relative position of objects and suggest reasons for things—"the man is sitting down on a stool and looks very tired"—"the sun is just peeping behind the hill and the man is going out to his work." "There is a clock by the window on the wall—it says half-past five." Last of all comes the tendency to notice the details of individual objects—what they are made of, their peculiarities of form and position.

The bearing of this upon the so-called observation lessons in

school is clear. Internal factors and felt needs are the springs of successful activity on the part of the children, and when you talk of training a child's power of observation, you may profitably keep in mind the possibility of cultivating his powers of purposeful action, success in which will depend upon watchfulness and care in the use of his senses. When mistakes in observation really matter, they become relatively infrequent. Many of the school observation lessons are, psychologically considered, nothing more than a formal attempt to associate names to things or to the specific sensory qualities of things. Whether they are justified or not it is not the business of psychology to say.

At the same time, the psychological qualities of a good observer include something more than interest in and knowledge of the subject under examination. Interest in a subject is not infrequently accompanied by preconceptions which may even be strong enough to vitiate the observations altogether. Until Galileo's time, people believed that a stone of ten pounds weight would fall ten times more quickly than a stone of one pound. That was the current belief, and nobody thought of questioning it. Yet the actual fall of stones must have been watched many times in the interval, but it was only with difficulty that Galileo persuaded his contemporaries to look at facts in freedom from the bias of preconception. In a like way, every teacher of science knows how difficult it is to prevent the quite honest "cooking" of results which comes when a pupil knows beforehand what he ought to find. Hence to train observation implies also a training in intellectual honesty and serves to lay the foundation of a love of truth for its own sake, which enables one to recognize facts whether or not they are in accordance with the preconceived ideas or hopes.

LIEUTENANT LEONARD KEENE HIRSHBERG.

JOHNS HOPKINS UNIVERSITY.

#### ON THE CONSTRUCTION OF A NON-ARISTOTELIAN LOGIC.

In a paper read at the Christmas meeting of the American Philosophical Association at Princeton University in December 1917,<sup>1</sup> the writer pointed out the existence of a group of logics, in which many of the implications of the traditional science become untrue.

<sup>1</sup> See also the writer's *Primer of Logic*, (B. D. Smith and Brothers, Pulaski, Va., 1917).

The members of this family are each one more general than the common logic, while certain of their underlying axioms stand in contradiction to one another. It is proposed now to construct in some detail that member of the group, whose characteristic postulate asserts the untruth of the proposition, *all a is all a*, for all meanings of *a*. In order to keep the discussion within the narrowest limits consistent with its purpose, we shall confine our attention as far as possible to a single type of implication. Because of the central importance of the syllogism in any system of inference, it will be deemed enough to deduce all the true and all the untrue propositions of that type.

There are four forms which the logician may recognize as necessary and sufficient to express the manner in which any two classes, *a* and *b*, may be related categorically. These will be represented by the letters  $\alpha$ ,  $\beta$ ,  $\gamma$  and  $\epsilon$ . Accordingly let

$$\begin{aligned}\alpha(ab) &= \text{All } a \text{ is all } b, \\ \beta(ab) &= \text{Some } a \text{ is some } b, \\ \gamma(ab) &= \text{All } a \text{ is some } b, \\ \epsilon(ab) &= \text{No } a \text{ is } b,\end{aligned}$$

the word *some*, which is explicit in  $\beta$  and  $\gamma$ , being interpreted to mean *some at least, not all*. This meaning of the word is unambiguously established by the properties of the four forms.

By  $x(ab)$ ,  $y(ab)$  etc., we shall understand a proposition, which may take on any one of these four meanings, the *terms* being the *subject* *a*, which is written first, and the *predicate* *b*, which is written second. When it shall be necessary to indicate that one of these forms is false, we shall place a prime (') to the right. Thus  $x(ab)$  is false will be represented by  $x'(ab)$ ,  $[x'(ab)]'$  by  $x''(ab)$ . A comma between the terms will indicate that the term order is not settled. Accordingly  $x(a, b)$  will stand either for  $x(ab)$  or  $x(ba)$ .

In addition to the categorical forms the logician distinguishes,

1. the *Hypothetical* relationship,  
 $x \angle y = x$  implies  $y$ ,  
 $(x \angle y)' = x$  does not imply  $y$ ,
2. the *Conjunctive* relationship,  
 $xy = x$  and  $y$ ,
3. the *Disjunctive* relationship,  
 $x + y = x$  or  $y$ .

By the *null-proposition* he understands an impossibility and by the *null-class*, a class, which contains no objects. By the *one-proposition* he understands a proposition, which is true in any given system of inference for all meanings of the terms and by the *one-class*, a class, which contains all the objects, which are in question. We shall denote the null-class and the null-proposition by the symbol  $o$ , the one-class and the one-proposition by the symbol  $i$ , and we shall from time to time replace the  $a$  and  $b$ , the  $x$  and  $y$ , by these special values. In every case it will be clear from the position of the symbol, whether class or proposition is meant.

The *syllogism* is a form of implication belonging to one of the types:

$$\begin{aligned}x(ba)y(cb) \angle z(ca), \\x(ab)y(cb) \angle z(ca), \\x(ba)y(bc) \angle z(ca), \\x(ab)y(bc) \angle z(ca).\end{aligned}$$

These differences are known as the first, second, third and fourth *figures* of the *syllogism* respectively. The two forms conjoined to the left of the implication sign are called the *premises* and the form, which stands to the right of the implication sign, is called the *conclusion*. The predicate of the conclusion is called the *major term* and points out the *major premise* and the subject of the conclusion is called the *minor term* and points out the *minor premise*. The term, which is common to the premises and which does not appear in the conclusion, is called the *middle term*. The conjunctive relationship of logic being commutative, the order of the premises is indifferent, but, as a matter of convention, we agree always to write the major premise first. This will always be possible by applying the principle,  $(xy \angle z) \angle (yx \angle z)$ .

Since  $x$ ,  $y$  and  $z$  may take on any one of the four values,  $\alpha$ ,  $\beta$ ,  $\gamma$ , and  $\epsilon$ , there will be sixty-four modes in each one of the four figures, in which  $x(a,b)y(b,c) \angle z(ca)$  can be expressed. Each member of this array of syllogistic variations is called a *mood* of the array. The true propositions of the array are called *valid moods* of the array and the other moods are called *invalid moods* of the array.

The principles of deduction, which are given below and which we shall assume as necessity requires, are, of course, not all independent, but no attempt will be made here to point out their interconnection. We shall assume:

I <sup>2</sup> $(xy\angle z)(z\angle w)\angle(xy\angle w)$ $(xy\angle z)(w\angle x)\angle(wy\angle z)$ $(xy\angle z)(w\angle y)\angle(xw\angle z)$	V $(x\angle y)\angle(y'\angle x')$ $(x\angle y')\angle(y\angle x')$ $(x'\angle y)\angle(y'\angle x)$
II $(xy\angle z)\angle(xz'\angle y')$ $(xy\angle z)\angle(z'y\angle x')$	VI $(x\angle y)\angle(xy'\angle o)$ $(xy\angle o)\angle(x\angle y')$
III $(xy\angle z)'(w\angle z)\angle(xy\angle w)'$ $(xy\angle z)'(x\angle w)\angle(wy\angle z)'$ $(xy\angle z)'(y\angle w)\angle(xw\angle z)'$	VII $(x\angle y)(y\angle z)\angle(x\angle z)$ VIII $(x\angle y)\angle(wx\angle wy)$
IV $(xy\angle z)'\angle(xz'\angle y)'$ $(xy\angle z)'\angle(z'y\angle x)'$	IX $(x\angle y)(x\angle y')\angle(x\angle o)$ $(x\angle o)\angle(x\angle y)$

The valid moods of the array  $x(a,b)y(b,c)\angle z(ca)$ , ( $x$ ,  $y$  and  $z$  representing only the unprimed letters), which number twenty-one in the system of inference we are about to construct, are all gotten by the aid of principles I from the postulates given below,<sup>3</sup> viz.

- |   |  |
|---|--|
| i. $a(ba)\beta(cb)\angle\beta(ca)$          | ii. $a(ba)\epsilon(cb)\angle\epsilon(ca)$      |
| iii. $\gamma(ba)\gamma(cb)\angle\gamma(ca)$ | iv. $\gamma(ab)\epsilon(bc)\angle\epsilon(ca)$ |
| v. $\beta(ab)\angle\beta(ba)$               | vi. $a(ab)\angle a(ba)$                        |

The valid moods of the arrays,  $x(a,b)y'(b,c)\angle z'(ca)$  and  $x'(a,b)y(b,c)\angle z'(ca)$ , of which there are twenty-three and nineteen respectively, may be derived at once from the results now obtained by principles II.

The valid moods of the array,  $x(a,b)y(b,c)\angle z'(ca)$ , there being one hundred and fourteen of this type, may be obtained from

<sup>2</sup> Most of these principles are well known to logicians. I owe my knowledge of them for the first time—but more especially I owe my knowledge of the method here employed—to certain lectures of Prof. E. A. Singer, Jr., delivered at the University of Pennsylvania about ten years ago.

<sup>3</sup> The operation of *simple conversion* consists in the interchange of subject and predicate. Postulates v and vi express the simple convertibility of  $\alpha$  and  $\beta$ . It should be pointed out that this same character may be proven of  $\epsilon$  by the aid of the characteristic postulate,  $i\angle\gamma(aa)$ , (see below), as follows:

$\gamma(ab)\epsilon(bc)\angle\epsilon(ca)$  yields  $\gamma(aa)\epsilon(ac)\angle\epsilon(ca)$ , for  $a = b$ , and  
 $[\gamma(aa)\epsilon(ac)\angle\epsilon(ca)] [i\angle\gamma(aa)] \angle [\epsilon(ac)\angle\epsilon(ca)]$

by the second member of I.

The non-convertibility of  $\gamma$ , expressed by  $[\gamma(ab)\angle\gamma(ba)]'$ , may be established at once by making  $a = o$  and  $b = i$ , (see the characteristic postulates xi below).



those of the array,  $x(a,b)y(b,c)z(ca)$ , by the aid of the additional postulates:<sup>4</sup>

- vii.  $\alpha(ba)\beta(cb)\gamma'(ca)$
- viii.  $\beta(ba)\alpha(cb)\gamma'(ca)$
- ix.  $\alpha(ba)\epsilon(cb)\gamma'(ca)$
- x.  $\alpha(ab)\gamma'(ab)$
- $\alpha(ab)\gamma\epsilon'(ab)$

The implications,

$$\begin{array}{ll} \alpha(ab)\gamma\alpha''(ab), & \gamma(ab)\gamma''(ab), \\ \beta(ab)\gamma\beta''(ab), & \epsilon(ab)\gamma\epsilon''(ab), \end{array}$$

which we should have to use in this connection may be established thus:

- iii will yield  $\gamma(ba)\gamma(bb)\gamma(ba)$ , for  $b=c$ , and
- $[\gamma(ba)\gamma(bb)\gamma(ba)] [i\gamma(bb)] [\gamma(ba)\gamma(ba)]$ , by I.
- Also  $[\gamma(ba)\gamma(ba)] [\gamma(ba)\gamma'(ba)\gamma o]$ , by VI,
- and  $[\gamma(ba)\gamma'(ba)\gamma o] [\gamma(ba)\gamma''(ba)]$ , by VI.

No valid implications of syllogistic form exist, other than the ones that have now been enumerated, as will appear later on, when all of the remaining variants shall have been declared untrue. It will be necessary at this point to state the characteristic postulates of the logic, which we have been constructing. It has not been essential to do this up to now, because every form of inference, which is valid here, is also valid in the common logic. They are required in order to establish the invalidity of those forms, which ordinarily taken to be valid, are invalid here. These characteristic postulates, which are, however, evidently not independent,<sup>5</sup> are:

<sup>4</sup> It must be noticed that  $\alpha(ab)\gamma\beta'(ab)$  and  $\alpha(ab)\gamma\epsilon'(ab)$  may be derived from vii and ix respectively through the use of the characteristic postulate,  $\gamma(aa)\gamma o$ , as follows:

- ix yields  $\alpha(ba)\epsilon(ab)\gamma'(aa)$ , for  $a=c$ , and, by I,
- $[\alpha(ba)\epsilon(ab)\gamma'(aa)] [\gamma'(aa)\gamma o] [\alpha(ba)\epsilon(ab)\gamma o]$ .
- Also  $[\alpha(ba)\epsilon(ab)\gamma o] [\alpha(ba)\gamma\epsilon'(ab)]$ , by VI, and
- $[\alpha(ab)\gamma\alpha(ba)] [\alpha(ba)\gamma\epsilon'(ab)] [\alpha(ab)\gamma\epsilon'(ab)]$ , by VII.

A similar derivation will yield  $\alpha(ab)\gamma\beta'(ab)$ .

From these two, together with  $x$ , by principle V, we obtain immediately,

$$\begin{array}{ll} \epsilon(ab)\gamma\alpha'(ab), & \epsilon(ab)\gamma\beta'(ab), \\ \gamma(ab)\gamma\alpha'(ab), & \beta(ab)\gamma\alpha'(ab), \end{array}$$

results which we have constantly to employ in conjunction with the valid moods of the array,  $x(a,b)y(b,c)z(ca)$ , in order to obtain the valid moods of the array,  $x(a,b)y(b,c)z'(ca)$ .

<sup>5</sup> The selection of these postulates, while in large measure arbitrary, has been such as not to contradict the definition of the null-class. Then  $o$  and  $i$  in the parentheses refer, of course, to the null- and the one-class; the  $o$  to the right of the implication sign refers to the null-proposition.

xi. $\alpha(oo)\angle o$	$\alpha(oi)\angle o$	$\alpha(io)\angle o$	$\alpha(ii)\angle o$
$\beta(oo)\angle o$	$\beta(oi)\angle o$	$\beta(io)\angle o$	$\beta'(ii)\angle o$
$\gamma'(oo)\angle o$	$\gamma'(oi)\angle o$	$\gamma(io)\angle o$	$\gamma'(ii)\angle o$
$\epsilon'(oo)\angle o$	$\epsilon'(oi)\angle o$	$\epsilon'(io)\angle o$	$\epsilon(ii)\angle o$

If we postulate in addition,  $\alpha(aa)\angle o$  and  $\gamma'(aa)\angle o$ , the members of the following sets may be made to depend upon those which have just been written down, i. e.,

$\alpha(aa)\angle \alpha'(aa)$	$[\alpha'(aa)\angle \alpha(aa)]'$
$[\beta(aa)\angle \beta'(aa)]'$	$[\beta'(aa)\angle \beta(aa)]'$
$[\gamma(aa)\angle \gamma'(aa)]'$	$\gamma'(aa)\angle \gamma(aa)$
$[\epsilon(aa)\angle \epsilon'(aa)]'$	$[\epsilon'(aa)\angle \epsilon(aa)]'$
$[\beta(ab)\angle \gamma'(ab)]'$	$[\gamma(ab)\angle \beta'(ab)]'$
$[\gamma(ab)\angle \epsilon'(ab)]'$	$[\epsilon(ab)\angle \gamma'(ab)]'$
$[\gamma(ab)\angle \gamma'(ba)]'$	

In continuation of our task of deducing the invalid moods of the syllogism, it will be convenient to begin with the array,  $x(a,b)y(b,c)\angle z'(ca)$ . Ninety-six of the invalid moods of this type may be reduced to simpler invalid forms of inference already established, and so shown to be invalid, (1) either by identifying terms in a  $\gamma$ -premise or a  $\gamma$ -conclusion and suppressing the part  $\gamma(aa)$ , or (2) by replacing the subject and predicate of a  $\beta$ -premise or a  $\beta$ -conclusion by unity and suppressing the part  $\beta(ii)$ .<sup>6</sup> The

\* (1) Suppose  $\beta(ba)\gamma(cb)\angle \epsilon'(ca)$  to be a valid mood.

$\beta(ba)\gamma(cb)\angle \epsilon'(ca)$  yields  $\beta(ii)\gamma(oi)\angle \epsilon'(oi)$  for  $a=b=i, c=o$ ;  
 $[\beta(ii)\gamma(oi)\angle \epsilon'(oi)] [\epsilon'(oi)\angle o] \angle [\beta(ii)\gamma(oi)\angle o]$ , by VII;  
 $[\beta(ii)\gamma(oi)\angle o] \angle [\beta(ii)\angle \gamma'(oi)]$ , by VI.

But the last result is invalid and

$\therefore \beta(ba)\gamma(cb)\angle \epsilon'(ca)$  is invalid.

(2) Suppose  $\beta(ba)\beta(bc)\angle \gamma'(ca)$  to be a valid mood.

$\beta(ba)\beta(bc)\angle \gamma'(ca)$  yields  $\beta(ba)\beta(ba)\angle \gamma'(aa)$ , for  $a=c$ ;  
 $[\beta(ba)\beta(ba)\angle \gamma'(aa)] [\gamma'(aa)\angle o] \angle [\beta(ba)\beta(ba)\angle o]$ , by VII;  
 $[\beta(ba)\beta(ba)\angle o] \angle [\beta(ba)\angle \beta'(ba)]$ , by VI.

But the last result is invalid and

$\therefore \beta(ba)\beta(bc)\angle \gamma'(ca)$  is invalid.

The four non-implications,

$[\alpha(ab)\angle \alpha'(ab)]'$ ,	$[\gamma(ab)\angle \gamma'(ab)]'$ ,
$[\beta(ab)\angle \beta'(ab)]'$ ,	$[\epsilon(ab)\angle \epsilon'(ab)]'$ ,

which we should continually have to employ in applying the method of the last example, may be established as follows:

$[\alpha(ab)\angle \alpha'(ab)] \angle [\alpha(ab)\alpha''(ab)\angle o]$ , by VI;  
 $[\alpha(ab)\alpha''(ab)\angle o] [\alpha(ab)\angle \alpha''(ab)] \angle [\alpha(ab)\alpha(ab)\angle o]$ , by I;  
 $[\alpha(ab)\angle \alpha(ab)\alpha(ab)] [\alpha(ab)\alpha(ab)\angle o] \angle [\alpha(ab)\angle o]$ , by VII;  
 $[\alpha(ab)\angle o] \angle [\alpha(ab)\alpha(ca)\alpha(cb)\angle o]$ , by VIII;  
 $[\alpha(ab)\alpha(ca)\alpha(cb)\angle o] \angle [\alpha(ab)\alpha(ca)\angle \alpha'(cb)]$ , by VI.

remaining forty-six invalid moods of this type may be derived from results already obtained by the aid of principles III and IV and the additional postulates.

- |   |  |
|---|--|
| xii. $[a(ba)a(cb)\angle a'(ca)]'$           | xiii. $[a(ba)\epsilon(cb)\angle \epsilon'(ca)]'$ |
| xiv. $[a(ba)\beta(cb)\angle \beta'(ca)]'$   | xv. $[\beta(ba)\beta(cb)\angle \epsilon'(ca)]'$  |
| xvi. $[a(ba)\gamma(cb)\angle \gamma'(ca)]'$ | xvii. $[\gamma(ba)a(cb)\angle \gamma'(ca)]'$     |

All but eight<sup>7</sup> of the two hundred and thirty-five invalid moods of the array,  $x(a,b)y(b,c)\angle z(ca)$ , may now be obtained, those of the arrays,  $x'(a,b)y(b,c)\angle z'(ca)$  and  $x(a,b)y'(b,c)\angle z'(ca)$  can be gotten at once by principles III and IV, and it will be easy to show that all of the two hundred and fifty-six moods of each one of the arrays  $x'(a,b)y(b,c)\angle z(ca)$ ,  $x(a,b)y'(b,c)\angle z(ca)$ ,  $x'(a,b)y'(b,c)\angle z(ca)$  and  $x'(a,b)y'(b,c)\angle z'(ca)$  are invalid, without making any further assumptions.

HENRY BRADFORD SMITH.

UNIVERSITY OF PENNSYLVANIA.

But this last result contradicts postulate xii below.

$\therefore a(ab)\angle a'(ab)$  is invalid.

The second and third forms,  $\beta(ab)\angle \beta'(ab)$  and  $\gamma(ab)\angle \gamma'(ab)$ , will be seen to be established as invalid on making  $a=b=i$ , and the last,  $\epsilon(ab)\angle \epsilon'(ab)$ , on making  $a=b=o$ .

<sup>7</sup> The mood  $\beta(ba)\epsilon(cb)\angle \gamma(ca)$ , which will have to be set down as a postulate, implies at once its own invalidity in the other three figures. The remaining four follow from  $\gamma(ba)\beta(cb)\angle \beta(ca)$ .

The two examples which follow will be enough to illustrate the method of deducing the moods of this array.

- (1)  $a(ba)\beta(cb)\angle \beta'(ca)$  is an invalid mood.  
 $[a(ba)\beta(cb)\angle \beta'(ca)]'[a(ca)\angle \beta'(ca)]\angle [a(ba)\beta(cb)\angle a'(ca)]'$ , by III.
- (2) Suppose  $a(ba)\beta(cb)\angle \gamma(ca)$  to be a valid mood.  
 $[a(ba)\beta(cb)\angle \gamma(ca)] [a(ba)\beta(cb)\angle \gamma'(ca)]\angle [a(ba)\beta(cb)\angle o]$ , by IX;  
 $[a(ba)\beta(cb)\angle o]\angle [a(ba)\beta(cb)\angle a'(ca)]$ , by IX.

But  $a(ba)\beta(cb)\angle a'(ca)$  is invalid by the last example.

$\therefore a(ba)\beta(cb)\angle \gamma(ca)$  is invalid.

## LOGIC IN NUMBERS.

Logic is the science of consistency. Given a set of propositions, the fundamental problem of logic is to determine whether the propositions can be true together. It is possible to reduce this fundamental problem to a purely mathematical form and to transfer the problem from the domain of philosophy to the domain of mathematics. The system of Boole and other systems derived from his, employ mathematical symbols in logical investigations, but meanings are attributed to the symbols that prevent the application of ordinary mathematical processes and it is impossible to proceed beyond cases of extreme simplicity. By the method here outlined the problem of the logician, however intricate, may be expressed as a purely mathematical problem, in the statement of which  $+$  means *plus* and  $-$  means *minus* and  $2+2=4$ . The propositions may be expressed as a set of whole numbers and the consistency of the propositions depends upon whether the numbers can be divided into two groups such that the sum of the numbers placed in one group is equal to the sum of the numbers placed in the other group. If the two equal groups can be formed, the propositions are consistent. If it is impossible to form the two equal groups, then the propositions are inconsistent, that is to say, the propositions cannot all be true. Whether the two equal groups can be formed from the numbers arising from the proposition, is a question for the mathematician to answer. It will be necessary to define a few terms.

The sum of the coefficients of a polynomial, all being regarded as positive, is the *weight* of the polynomial. Half the weight is the *semi-weight*. If the polynomial can be made equal to 0 by making each variable either  $+1$  or  $-1$ , the polynomial is a *balance*. If the variables are written down (without coefficients) and those that are made  $+1$  in order to make the polynomial vanish are written with the  $+$  sign, and those that are made  $-1$  in order to make the polynomial vanish are written with the  $-$  sign, the expression is a *solution* of the balance.

Thus  $2a+3b+7c-5d-e$  is a balance, for if  $a$ ,  $c$ ,  $d$  and  $e$  are each  $+1$  and  $b$  is  $-1$ , the polynomial becomes  $2-3+7-5-1$ , which is equal to 0.  $a-b+c+d+e$  is a solution of the balance. The weight of the balance is  $2+3+7+5+1$  or 18.

Note that if it is possible to divide the coefficients of a polynomial, all being regarded as positive, into two groups such that

the sum of the coefficients placed in either group is the semi-weight of the polynomial, the polynomial is a balance. If the variables belonging to the coefficients placed in one of such groups are written with the signs they have in the balance, and the variables belonging to the coefficients placed in the other group are written with signs contrary to the signs they have in the balance, the variables form a solution.

If letters that do not appear in a balance are added to or are subtracted from a solution, the expression is still a solution. Such additional letters may be regarded as being in the balance with the coefficient 0.

Thus  $a-b+c+d+e+f-g$  is a solution of the balance,  $2a+3b+7c-5d-e$ .

If two or more balances have a common solution they are said to be *consistent* and to form a consistent system, and the common solutions are solutions of the system. But if there is no common solution the balances are *inconsistent* and form an inconsistent system.

Thus a system composed of the balances,

$$\begin{array}{rcl} 13m+4a+10b+3c+9d+n+3p+9q & & \\ 4m+3a & + & c-2d \quad +r+3s \end{array}$$

is consistent, for  $m+a-b-c-d-n-p+q+r-s$  is a solution of both balances. But a system composed of the same two balances and the balance,

$$m \quad -b \quad -c \quad +t$$

is inconsistent, for these three balances have no common solution.

If any letter must have the same sign as another letter in every solution of a balance or system of balances, the two letters are said to be *identical*, and two letters that have different signs in every solution are said to be *contradictory*.

Thus, in the system of two consistent balances mentioned in the preceding paragraph, the letters  $b$  and  $c$  are identical and  $m$  and  $b$  are contradictory, and so are  $m$  and  $c$ .

If a polynomial is constructed such that all solutions it may have are solutions of a system of balances, and such that all solutions there may be of the system are solutions of the polynomial, the polynomial is a *summary* of the system.

Thus  $4m+a+b+n+3c+3d+3p$  is a summary of the two balances,  $m+a+b+n$  and  $m+c+d+p$ .

The *sum* (and the difference) of any two given consistent balances is a balance consistent with them.

If there are two balances, a summary may be obtained by adding them together (or by subtracting one from the other), after multiplying one of them by any number that is greater than half the weight of the other.

Thus, if there are two balances,

$$\begin{array}{r} 2m+2a+b+c+n+p \\ m \quad \quad -b-c \quad \quad +t \end{array}$$

multiply the first by any number greater than 2 (which is half the weight of the second balance), say 3, and then add the second. We obtain,

$$7m+6a+2b+2c+3n+3p+t,$$

which is a summary of the two balances.

We may obtain a summary of any system of balances by adding the balances together (or by adding some and subtracting others) after multiplying the first of the balances by 1 and each of the others by successive powers of any number greater than half the weight of the balance that has the greatest weight.

Thus, if we have the system,

$$\begin{array}{r} 4m+a+c+e+g+i+n \\ 3m+a+c+e+g+i \quad +b+d+f+h \\ 4m \quad \quad +e \quad \quad +b+d+f+h+p, \end{array}$$

a summary may be obtained by adding the balances together after multiplying the first by 1, the second by any number greater than 6 (which is half the weight of the second balance, which has the greatest weight), say 7, and the third by 49 (the square of 7). We thus obtain

$$221m+8a+8c+57e+8g+8i+n+56b+56d+56f+56h+49p.$$

This expression is a summary of the given system of three balances. (This summary is not a balance; hence it may be inferred that the system from which it is derived is inconsistent.)

A summary of a system of balances may be at once obtained thus: Arrange the balances so that the several letters, as they occur in the different balances, are each in a separate column. (When a letter that appears in the system does not appear in any particular balance, it may be supposed to be inserted in that balance with the coefficient 0.) The coefficient of any letter in the summary is a number obtained by writing the coefficients of the letter in the order in which they appear in the column containing that letter,

commencing with the coefficient in the first balance as standing in the unit's place, the number so obtained being regarded as expressed in any scale whose radix is greater than half the weight of the balance that has the greatest weight.

Applying this method to the example in the preceding paragraph, the coefficient of  $m$  is 434; that of  $a$  is 11; that of  $n$  is 1; that of  $b$  is 110; that of  $p$  is 100; etc.; all read in any scale greater than 6. The summary may be written,

$$434m + 11a + 11c + 111e + 11g + 11i + n + 110b + 110d + 110f + 110h + 100p.$$

If any of the coefficients of the balances have negative signs the same rule may be applied for obtaining the coefficients of a summary, but in the number expressing the coefficient of such letter in the summary, negative numerals are used to correspond with the negative coefficients of the letter in the balances.

Thus, in the system

$$\begin{array}{rcl} 3m + 2a + n + p + t & & \\ 3m & + t + 2d + q + r & \\ m - a & - d & + s \end{array}$$

a summary is

$$133m + (-1)02a + n + p + 11t + (-1)20d + 10q + 10r + 100s$$

the numbers being in any scale greater than 4. The summary may be written in the scale of 5 thus,

$$133m - 43a + n + p + 10t - 30d + 10q + 10r + 100s.$$

If a summary is a balance, the system from which it is derived must be consistent; if, however, a summary is not a balance, the system from which it is derived must be an inconsistent system. The consistency, therefore, of a system of balances may be tested by reading off a summary and determining whether the summary is a balance.

Universal propositions may be expressed as balances. A balance represents a universal proposition, if all its solutions represent all cases that are conceivable, if the proposition be true. In the solution of a balance, or system of balances, let  $m$  (the first letter of *mundus*) represent something that is conceivable as existing in the universe of discourse; let  $m + a$  (or  $-m - a$ ) represent something that is conceivable as existing and as having an attribute denoted by  $a$ ; let  $m - a$  (or  $-m + a$ ) represent something that is conceivable as



existing and as not having the attribute denoted by  $a$ ; similarly, let  $m+a-b$  (or  $-m-a+b$ ) represent something that is conceivable as existing and as having the attribute denoted by  $a$  and as not having the attribute denoted by  $b$ ; generally, let any solution represent something that is conceivable as having the attributes denoted by the letters with one sign and as not having the attributes denoted by the letters with the other sign.

The balance  $m+a+b+n$  expresses the universal proposition "No  $a$  is  $b$ ," for all its solutions represent all cases that are possible, if the proposition be true. In every solution one of the letters,  $m$ ,  $a$  and  $b$ , has a sign different from that of the other two, which is exactly what is required by the proposition.

The balance  $m+a-b+p$  expresses the universal affirmative, "All  $a$  is  $b$ ." In every solution, if  $a$  has the same sign as  $m$ ,  $b$  has also the same sign as  $m$ ; but if  $m$  and  $a$  have different signs, then  $b$  may be  $+$  or  $-$ .

Sometimes it may be convenient to express a proposition by a system of balances instead of by a single balance. Thus "All  $a$  is  $b$ " may be expressed by the two balances.

$$\begin{array}{l} m+a+q+r \\ q+r+b+s \end{array}$$

Any universal proposition may be stated as a balance or system of balances. The following are given as illustrations:

Whatever is conceivable is  $a$ :  $m-a$ .

Nothing can be  $a$ :  $m+a$ .

$a$  and  $b$  are identical:  $a-b$ .

$a$  and  $b$  are contradictory:  $a+b$ .

$a$  is neither  $b$  nor  $c$ :  $\begin{array}{l} m+a+b+q \\ m+a \end{array} + c+r$ .

$a$  is either  $b$  or  $c$ , or both  $b$  and  $c$ :  $\begin{array}{l} m+a+p+q \\ p \end{array} + b+c+r$ .

$a$  is either  $b$  or  $c$ , but not both:  $\begin{array}{l} m+a-b-c+s+t \\ m+a+b+c \end{array} + u+v$ .

Of the three terms,  $a$ ,  $b$  and  $c$ , two, at least, are absent:  $2m+a+b+c+n$ .

Everything has at least two of the attributes denoted by  $a$ ,  $b$  and  $c$ :  $2m-a-b-c+p$ .

Of  $n$  things,  $a_1, a_2, \dots, a_n$ ,  $p$  at least are present and  $q$  at least are absent:  $(q-p)m+a_1+a_2+\dots+a_n+r_1+r_2+\dots+r_{n-p-q}$ .

To test the consistency of universal propositions, therefore, they

may be expressed as a system of balances, a summary may be read off, and whether the propositions are or are not consistent depends upon the purely mathematical question whether the summary is a balance.

Universal propositions express rules that must be observed in every solution of a system of balances expressing the propositions. A particular proposition expresses a rule that must be observed in at least one solution of the system expressing universal propositions. If a set of universal propositions and a particular proposition is given, to test their consistency a summary may be obtained of the universal propositions, and then certain variables may be given + or - signs in accordance with the particular proposition; then, if the summary is a balance, the particular proposition is consistent with the universal propositions; otherwise, it is not. Thus, if universal propositions and the particular proposition, "Some  $a$  is  $b$ " are given, there must be a solution of the summary of the universal propositions in which  $m$ ,  $a$  and  $b$  have the same sign. If in the summary  $m$ ,  $a$  and  $b$  are made +1, and the summary is still a balance, the propositions are consistent. If there are several particular propositions, the summary should be tested as to each one separately. It is to be observed that there is no implication that any solution of the summary must comply with more than one of the particular propositions.

The method here outlined is a general method of converting logical problems into a mathematical form. It is possible, however, to solve many problems by manipulating balances otherwise and there are a number of important theorems in regard to these expressions, but it would be beyond the purpose of this paper to enter upon a discussion of them. The following problems may serve to illustrate a method of obtaining solutions of balances.

If five chess queens are placed on a board containing 25 cells arranged in the form of a square, so that no two queens attack each other, prove that neither of the diagonals of the square can be without a queen.

Let  $(x, y)$  represent a cell which is the  $x$ th from the left and the  $y$ th from the bottom of the board. Of the cells,  $(1, 5)$ ,  $(2, 4)$ ,  $(3, 3)$ ,  $(4, 2)$  and  $(5, 1)$ , forming a diagonal, four at least are vacant. Hence the balance,

$$4m + (1,5) + (2,4) + (3,3) + (4,2) + (5,1) + p_1 \dots \dots \dots (I)$$

Similarly fourteen other balances may be formed, each of which contains  $4m$  and  $p$  with a different suffix, and also five cells indicated

1	3	7..	3	2
8.	9		10.	11.
12.	12.	12.	12.	12.
4	1	3	2	6
		4		
8.	9.	6	10.	11.
13.	13.	13.	13.	13.
7..	3	1	3	7..
	4		5	
	5	2	6	
8.	9.	7..	10.	11.
4	2	4	1	6
		5		
8.	9.	6	10.	11.
14.	14.	14.	14.	14.
2	5	7..	5	1
8.	9.		10.	11.
15.	15.	15.	15.	15.

in the diagram by a number corresponding with the suffix of  $p$  to be used with them. Thus, one of such balances is

$$4m + (2,5) + (4,5) + (3,4) + (2,3) + (4,3) + p_3.$$

If the fifteen balances are added together, after multiplying by 3 the balance that has  $p_7$  and by 2 the balances that have  $p_8, p_9, p_{10}, p_{11}, p_{12}, p_{13}, p_{14},$  and  $p_{15}$ , we obtain,

$$100m + 5S + p_1 + p_2 + p_3 + p_4 + p_5 + p_6 + 3p_7 + 2(p_8 + p_9 + p_{10} + p_{11} + p_{12} + p_{13} + p_{14} + p_{15}) \dots \dots \dots (II)$$

where  $S$  represents the 25 cells of the board.

Since 5 cells are occupied and 20 are vacant, we have the balance

$$15m + S \dots \dots \dots (III)$$

Subtracting 5 times (III) from (II) we get

$$25m + p_1 + p_2 + p_3 + p_4 + p_5 + p_6 + 3p_7 + 2(p_8 + p_9 + p_{10} + p_{11} + p_{12} + p_{13} + p_{14} + p_{15}).$$

The weight of this last balance is 50, and the coefficient of  $m$  is 25. Hence  $m$  is the contradictory of each of the  $p$ 's. Therefore,

$$m + p_1 \dots \dots \dots (IV)$$

is a balance. Subtracting (IV) from (I) we get,

$$3m + (1,5) + (2,4) + (3,3) + (4,2) + (5,1).$$

In every solution of this balance one of the cells has the same sign as  $m$ , and the other four cells have the opposite sign. Hence, one of these five cells, forming that diagonal, must be occupied and the other four must be vacant.

Similarly it may be shown that one of the cells forming the other diagonal must be occupied.

CHARLES P. R. MACAULAY.

CHICAGO.

## CURRENT PERIODICALS.

In *Science Progress* for January, 1918, "Recent Advances" occupy about one-third of the number. The subjects dealt with in this number are: Mathematics (10 pages); Astronomy (7); Physics ( $5\frac{1}{2}$ ); Physical Chemistry (3); Inorganic Chemistry (3); Organic Chemistry ( $4\frac{1}{4}$ ); Geology ( $5\frac{3}{4}$ ); Mineralogy and Crystallography ( $6\frac{1}{2}$ ); Botany (3); Plant Physiology ( $5\frac{1}{2}$ ); Zoology (6); Paleontology (5); and Anthropology (2). J. Reilly and W. N. Rae give an account of recent work in the determination of the density of liquids. By Lamb and Lee's "refinement of the hydrostatic method it is possible to obtain results correct to one unit in the seventh decimal place." The pyknometer method is criticised, and various specific gravity bottles are described.—James Small gives an account of the "age and area" law associated with the name of J. C. Willis of the Ceylon Botanic Gardens. The law is thus stated: "The geographical distribution of a species within a fairly uniform country not broken by serious barriers depends upon the age of that species within that country," with certain limitations. He gives an account of the controversy that has arisen, discusses the whole question, and states that his own new work on the evolution and geographical distribution of the *Compositae* has found the "age and area" law "very valuable indeed, confirming in the case of every tribe the phylogenetic conclusions reached in the study of the morphology and physiology of the subdivisions of that large and undoubtedly recent family."—K. M. Parker sums up all that is known up to the present of the structure and development of the pituitary body in all classes of vertebrata.—J. Reid Moir sees no valid reason for accepting the doctrine that Asia witnessed the earliest stages of man's evolution, and sees no cause or causes to preclude England, as far as pure theory is concerned, from having the distinction of being the home of earliest man. A Pliocene Age is indicated by our paleolithic flint implements, the Piltdown treasures, and other finds, which are all sufficiently significant to warrant care in awarding any preeminence in men's pre-paleolithic history to "unknown" Asia.—W. C. McC. Lewis gives under the heading "Popular Science" the first part of a paper "On the Structure of Matter,"—excellent, as far as it goes; but, if it prove to be as "popular" as it is good, we would have much reason to be pleased with the knowledge and taste of the masses in Britain.—Lord Leverhulme deals in an opti-

mistic spirit with the abolition of slums. Being himself a broad-minded and public-spirited man, he sees no serious difficulty ahead in the assault upon vested interests.—Philip E. B. Jourdain reviews in characteristic style the very remarkable collection of papers and addresses published last year by A. N. Whitehead under the title *The Organization of Thought*.—Characteristic also is the notice of Garrison's *History of Medicine*, in which the Editor curtly demolishes certain claims: "I cannot see how F. Schaudinn did anything of any importance whatever in connection with malaria, except to make bad mistakes." Thus are reputations made, and unmade!

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In *Scientia* for February, 1918, Andrew C. D. Crommelin, in his article on "The Galactic Circle as a Plane of Reference for Star Places," offers for criticism the particular plane that he has suggested for adoption, and sets forth a scheme which, as he says, "has been so widely advocated, and appeals to so many minds from its symmetry and simplicity, that I have little doubt that it will sooner or later be realized." He calls for suggestions and amendments, and hopes with their aid to place the scheme in such a form as "to command general assent."—U. Pierantoni develops from his own researches and those of others an argument which tends to throw a flood of light on the long-vexed problem of phosphorescence. He points out that further work along definite lines is still needed, and prophesies that the zoologist, botanist, physiologist, chemist and perhaps the pathologist, will all be called upon to play a part in the discovery of the mystery connected with photogenic bacteria, and the part played by micro-organisms in the phenomena of luminescence.

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